

# Vision Sciences Society

7th Annual Meeting ▪ May 11-16, 2007 ▪ Sarasota, Florida



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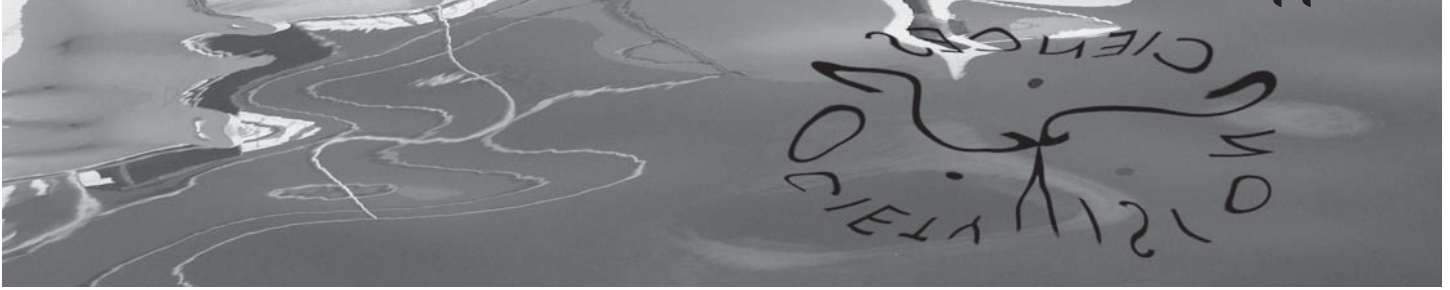


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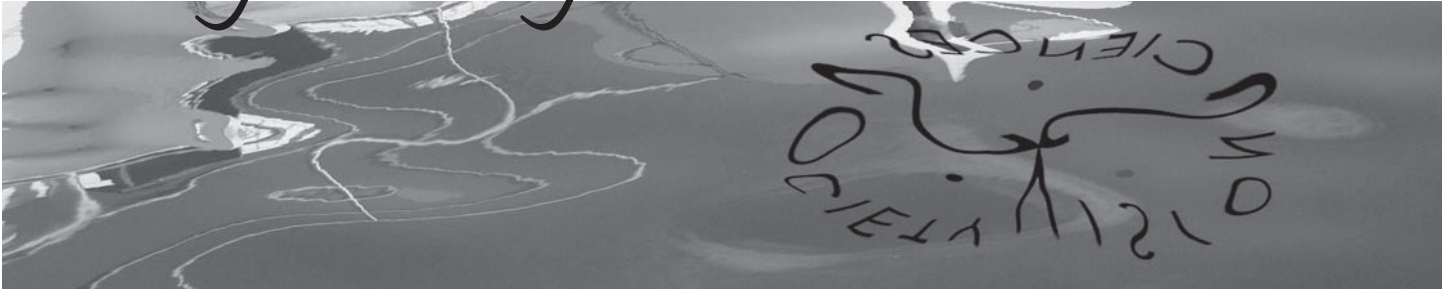
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# Young Investigator Award



## Zoë Kourtzi, Ph.D.

*Professor of Psychology, University of Birmingham*



The Young Investigator Award will be presented at the start of the Keynote Address on Sunday, May 13, 7:00 pm, in the Hyatt Ballroom.

Zoë Kourtzi, the first recipient of the VSS Young Investigator Award, was born in Greece. She completed her undergraduate degree in Psychology at the University of Crete before coming to the United States to begin her graduate studies at Rutgers University, in the laboratory of Maggie Shiffrar. After receiving her Ph.D. in Psychology in 1998 she spent a year as a postdoctoral student with Ken Nakayama and Nancy Kanwisher. She then moved to Germany to join the laboratory of Nikos Logothetis at Max Planck Institute in Tübingen. In 2005 Zoë moved to the University of Birmingham to assume her first faculty position. While a graduate and then a postdoctoral student Zoë has been exceptionally productive, publishing over 30 papers in high quality journals. In her research she employs psychophysical and multimodal imaging methods (fMRI, EEG, MEG) to investigate the neural substrates of coherent visual perception in the human brain.

### **Statement From the VSS Young Investigator Award Committee**

“The Award Committee recognized Zoë’s many outstanding fMRI studies that characterized the neural loci of shape processing in the human cortex. Her development of an important, widely used fMRI technique, ‘event-related adaptation’ was also commended. Her recent fMRI work on the maturation of visual evoked activity in primates is a promising new direction in her research program and demonstrates the diversity of her interests. This creative, productive young scientist represents the best qualities of the VSS community.”

# Keynote Address



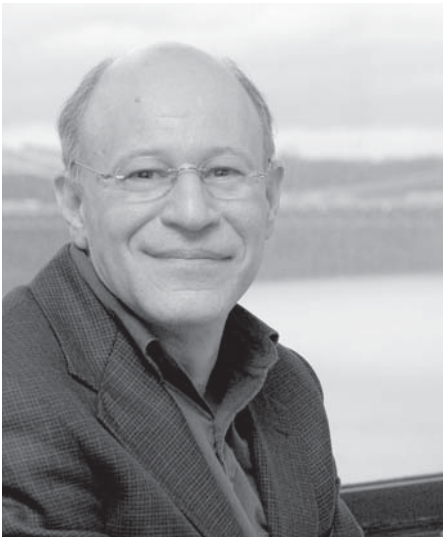
## The Interaction of Evoked and Spontaneous Activity in Visual Processing

Sunday, May 13, 7:00 - 8:30 pm, Hyatt Ballroom

In vivo recordings from primary visual cortex reveal that spontaneous background activity can be as complex as activity evoked by visual stimuli. Embedding visually evoked responses in such a strong and complex background seems like a confusing way to represent information about the visual world. However, modeling studies indicate that, contrary to intuition, information about visual stimuli may be better conveyed by a network displaying chaotic background activity than by a network without spontaneous activity.

### Larry Abbott, Ph.D.

Co-Director, Center for Theoretical Neuroscience  
Columbia University School of Medicine



Larry Abbott is a physicist-turned-biologist who uses mathematical modeling to study the neural networks that are responsible for our actions and behaviors. Abbott's thesis work at Brandeis University was in the area of theoretical elementary particle physics, culminating in a PhD in 1977. He

then worked in theoretical particle physics at the Stanford Linear Accelerator Center and, later, at CERN, the European center for particle physics research. He became an assistant professor in the physics department at Brandeis in 1979, received tenure in 1982, and became a full professor of physics in 1988. His best-known achievements in particle physics include work on the cosmological constant, development of the background field method, calculations of the microwave background anisotropy, and work in gravity and gauge field theories.

Abbott began his transition to neuroscience research in 1989 and moved to the Biology Department at Brandeis in 1993. From 1994-2005, he was the co-director of the Sloan-Swartz Center for Theoretical Neuroscience at Brandeis, and from 1997-2002 was the director of the Volen Center. He held both the Nancy Lurie Marks and Zalman Abraham Kekst chairs in neuroscience. While at Brandeis, Abbott in collaboration with Eve Marder developed the dynamic clamp, a technique that has now become a standard tool of experimental electrophysiology.

In 2005, Abbott joined the faculty of Columbia University where he is now the William Bloor Professor of Theoretical Neuroscience and co-director of the Center for Theoretical Neuroscience. His research involves using analytic techniques and computer simulation to study the electrical characteristics of single neurons, to determine how neurons interact to produce functioning neural circuits, and to investigate how large populations of neurons represent, store, and process information. He is the author of numerous research articles in both particle physics and neuroscience and co-author with Peter Dayan of a widely used textbook on theoretical neuroscience.

Keynote Address is sponsored by  
Cambridge Research Systems.



# Meeting Schedule



## Friday, May 11

11:00 am - 7:30 pm	Onsite and Pre-Registration Check In	<i>Hyatt Ballroom Foyer</i>
1:00 - 3:00 pm	Member-Initiated Symposia, Session 1	<i>Hyatt, Various Rooms</i>
3:00 - 3:30 pm	Complimentary Coffee Service	<i>Hyatt Ballroom Foyer</i>
3:30 - 5:30 pm	Member-Initiated Symposia, Session 2	<i>Hyatt, Various Rooms</i>
5:45 - 8:45 pm	Opening Night Reception	<i>Municipal Auditorium</i>
5:45 - 8:45 pm	Exhibits Open	<i>Municipal Auditorium</i>
5:45 - 8:45 pm	Poster Session A	<i>Municipal Auditorium</i>

## Saturday, May 12

7:30 am - 5:30 pm	Onsite and Pre-Registration Check In	<i>Hyatt Ballroom Foyer</i>
8:00 - 8:30 am	Complimentary Coffee Service	<i>Hyatt Ballroom Foyer</i>
8:30 - 10:00 am	Morning Talk Session 1	<i>North and South Hyatt Ballrooms</i>
8:30 am - 1:00 pm	Poster Session B	<i>Municipal Auditorium</i>
8:30 am - 4:00 pm	Exhibits Open	<i>Municipal Auditorium</i>
10:30 am - 12:15 pm	Morning Talk Session 2	<i>North and South Hyatt Ballrooms</i>
12:00 pm	Educational Outreach Event, Ione Fine	<i>G.WIZ Science Museum</i>
1:00 - 2:00 pm	Lunch Break	
2:00 - 3:30 pm	Afternoon Talk Session 1	<i>North and South Hyatt Ballrooms</i>
2:00 - 6:30 pm	Poster Session C	<i>Municipal Auditorium</i>
3:30 - 4:00 pm	Complimentary Coffee & Beverages	<i>Hyatt Ballroom Foyer</i>
4:00 - 5:45 pm	Afternoon Talk Session 2	<i>North and South Hyatt Ballrooms</i>

## Sunday, May 13

8:00 - 8:30 am	Complimentary Coffee Service	<i>Hyatt Ballroom Foyer</i>
8:00 am - 5:30 pm	Onsite and Pre-Registration Check In	<i>Hyatt Ballroom Foyer</i>
8:30 - 10:00 am	Morning Talk Session 1	<i>North and South Hyatt Ballrooms</i>
8:30 am - 1:00 pm	Poster Session D	<i>Municipal Auditorium</i>
8:30 am - 4:00 pm	Exhibits Open	<i>Municipal Auditorium</i>
10:30 am - 12:15 pm	Morning Talk Session 2	<i>North and South Hyatt Ballrooms</i>
1:00 - 2:00 pm	Lunch Break	
2:00 - 3:30 pm	Afternoon Talk Session 1	<i>North and South Hyatt Ballrooms</i>
2:00 - 6:30 pm	Poster Session E	<i>Municipal Auditorium</i>
3:30 - 4:00 pm	Complimentary Coffee & Beverages	<i>Hyatt Ballroom Foyer</i>
4:00 - 5:45 pm	Afternoon Talk Session 2	<i>North and South Hyatt Ballrooms</i>
7:00 - 8:30 pm	Keynote Address, Larry Abbott and Presentation of VSS Awards	<i>Hyatt Ballroom</i>

**Monday, May 14**

7:30 – 8:00 am	Complimentary Coffee Service	<i>Hyatt Ballroom Foyer</i>
7:30 am - 4:30 pm	Onsite and Pre-Registration Check In	<i>Hyatt Ballroom Foyer</i>
8:00 – 9:30 am	Morning Talk Session 1	<i>North and South Hyatt Ballrooms</i>
8:00 am – 12:30 pm	Poster Session F	<i>Municipal Auditorium</i>
8:00 am – 4:00 pm	Exhibits Open	<i>Municipal Auditorium</i>
10:00 am – 11:45 pm	Morning Talk Session 2	<i>North and South Hyatt Ballrooms</i>
12:30 – 1:00 pm	Lunch Break	
1:00 – 2:00 pm	Business Meeting	<i>Hyatt Ballroom South</i>
2:00 – 2:30 pm	Complimentary Coffee & Beverages	<i>Hyatt Ballroom Foyer</i>
2:00 – 6:30 pm	Poster Session G	<i>Municipal Auditorium</i>
2:30 – 4:15 pm	Afternoon Talk Session	<i>North and South Hyatt Ballrooms</i>
7:00 – 10:00 pm	Demo Night	<i>G.WIZ Science Museum</i>

**Tuesday, May 15**

8:00 – 8:30 am	Complimentary Coffee Service	<i>Hyatt Ballroom Foyer</i>
8:00 am - 5:30 pm	Onsite and Pre-Registration Check In	<i>Hyatt Ballroom Foyer</i>
8:30 – 10:00 am	Morning Talk Session 1	<i>North and South Hyatt Ballrooms</i>
8:30 am – 1:00 pm	Poster Session H	<i>Municipal Auditorium</i>
8:30 am – 4:00 pm	Exhibits Open	<i>Municipal Auditorium</i>
10:30 am – 12:15 pm	Morning Talk Session 2	<i>North and South Hyatt Ballrooms</i>
1:00 – 2:00 pm	Lunch Break	
2:00 – 3:30 pm	Afternoon Talk Session 1	<i>North and South Hyatt Ballrooms</i>
2:00 – 6:30 pm	Poster Session I	<i>Municipal Auditorium</i>
3:30 – 4:00 pm	Complimentary Coffee & Beverages	<i>Hyatt Ballroom Foyer</i>
4:00 – 5:45 pm	Afternoon Talk Session 2	<i>North and South Hyatt Ballrooms</i>
9:00 pm – 1:00 am	Club Vision	<i>Hyatt Ballroom South</i>

**Wednesday, May 16**

8:00 – 8:30 am	Complimentary Coffee Service	<i>Hyatt Ballroom Foyer</i>
8:00 am - 12:15 pm	Onsite and Pre-Registration Check In	<i>Hyatt Ballroom Foyer</i>
8:30 – 10:00 am	Morning Talk Session 1	<i>North and South Hyatt Ballrooms</i>
8:30 am – 1:00 pm	Poster Session J	<i>Municipal Auditorium</i>
10:30 am – 12:15 pm	Morning Talk Session 2	<i>North and South Hyatt Ballrooms</i>
1:00 pm	VSS 2007 Ends	



# Poster Schedule



*Please Note:* Each poster session has *two* Author Presents times.

## Poster Session A, Friday, May 11

**5:45 - 8:45 pm**

**Setup: 5:30 - 5:45 pm**

**Author Presents 1: 5:45 - 7:15 pm**

Eye Movements: Cognitive I  
2D Motion I  
Perceptual Learning I

**Author Presents 2: 7:15 – 8:45 pm**

Face perception: Experience and Context  
Rivalry and Bi-stability I  
3D Perception: Cue Integration  
Cortical Receptive Fields and Perception

**Take Down: 8:45 - 9:00 pm**

## Poster Session B, Saturday, May 12

**8:30 am - 1:00 pm**

**Setup: 8:15 - 8:30 am**

**Author Presents 1: 8:30 - 10:15 am**

Locomotion I: General  
Visuomotor Control: Hand Movements  
Attention: Neural Mechanisms

**Author Presents 2: 10:30 am – 12:15 pm**

Eye Movements: Saccades and Smooth Pursuit  
Scene Perception I  
2D Shape and Form  
Special populations: Development

**Take down: 1:00 - 1:30 pm**

## Poster Session C, Saturday, May 12

**2:00 - 6:30 pm**

**Setup: 1:30 - 2:00 pm**

**Author Presents 1: 2:00 - 3:45 pm**

Brightness, Lightness and Luminance  
Adaptation and Aftereffects  
3D Perception: Space  
Visual Control of Movement: Neural Mechanisms

**Author Presents 2: 4:00 – 5:45 pm**

V1 and Thalamus: Anatomy and Organization  
Spatial Vision: Contrast and Masking  
Multisensory Processing

**Take down: 6:30 - 6:45 pm**

## Poster Session D, Sunday, May 13

**8:30 am - 1:00 pm**

**Setup: 8:15 - 8:30 am**

**Author Presents 1: 8:30 - 10:15 am**

Rivalry and Bi-Stability II  
Time Perception and Temporal Processing  
Perception and action II

**Author Presents 2: 10:30 am – 12:15 pm**

Motion Integration  
Attention: Selection, Enhancement, & Orienting

**Take down: 1:00 - 1:30 pm**



**Poster Session E, Sunday, May 13****2:00 - 6:30 pm****Setup: 1:30 -2:00 pm****Author Presents 1: 2:00 - 3:45 pm**

Perceptual Learning III  
 Biological Motion I  
 Reading  
 Special Populations: Disorder and Disease

**Author Presents 2: 4:00 – 5:45 pm**

Color and Surface Perception  
 Face Perception: Parts, Wholes, Features, and Configurations  
 Attention and Inhibition

**Take down: 6:30 - 6:45 pm****Poster Session F, Monday, May 14****8:00 am - 12:30 pm****Setup: 7:45 - 8:00 am****Author Presents 1: 8:00 - 9:45 am**

Spatial Vision: Mechanisms and Orientation  
 Eye Movements: Attention and Search  
 Attention: Divided Attention, Inattention, and Inhibition

**Author Presents 2: 10:00 am – 11:45 pm**

Perceptual Organization: Contours II  
 Face Perception: Neural mechanisms  
 Visual Working and Short-Memory Memory

**Take down: 12:30 - 1:00 pm****Poster Session G, Monday, May 14****2:00 - 6:30 pm****Setup: 1:30 -2:00 pm****Author Presents 1: 2:00 - 3:45 pm**

Color Vision Mechanisms  
 Eye Movements: Effects on Perception  
 Motion Adaptation and Aftereffects  
 Motion in Depth and Optic Flow

**Author Presents 2: 4:00 – 5:45 pm**

Attention: Interaction with Memory or Emotion  
 Attention: Training Effects and Subitizing  
 Search I  
 Navigation

**Take down: 6:30 - 6:45 pm****Poster Session H, Tuesday, May 15****8:30 am - 1:00 pm****Setup: 8:15 -8:30 am****Author Presents 1: 8:30 - 10:15 am**

Visual Memory  
 Auditory-Visual Interactions  
 Multiple Object Tracking

**Author Presents 2: 10:30 am – 12:15 pm**

Binocular Vision: Stereopsis and Fusion  
 3D Perception: Shape and Depth  
 Face Spaces and Adaptation

**Take down: 1:00 - 1:30 pm****Poster Session I, Tuesday, May 15****2:00 - 6:30 pm****Setup: 1:30 -2:00 pm****Author Presents 1: 2:00 - 3:45 pm**

Grouping and Segmentation II  
 Attention: Theoretical and Computational Models  
 Spatial Vision: Natural Scenes and Texture

**Author Presents 2: 4:00 – 5:45 pm**

Object Perception  
 Face Perception: Emotion I  
 Motion: Apparent Motion and Illusions

**Take down: 6:30 - 6:45 pm****Poster Session J, Wednesday, May 16****8:30 am - 1:00 pm****Setup: 8:15 -8:30 am****Author Presents 1: 8:30 - 10:15 am**

Locomotion II: Walking and Posture  
 Processing of Objects  
 Scene Perception II  
 Search II

**Author Presents 2: 10:30 am – 12:15 pm**

Attention: Object-based Selection  
 Attentional Capture  
 Attention: Temporal Selection  
 Attentional Modulation of Early Vision

**Take down: 1:00 - 1:15 pm**

# Talk Schedule



## Saturday, May 12

### Time

8:30 - 10:00 am

10:30 am - 12:15 pm

2:00 - 3:30 pm

4:00 - 5:45 pm

### Hyatt Ballroom North

3D Perception

The Many Functions of the Ventral Stream

Perceptual Organization: Contours I

Attention: Objects, Scenes, and Search

### Hyatt Ballroom South

Perceptual Learning II

Global Motion and Motion Integration

Perception and Action I

Face Perception

## Sunday, May 13

### Time

8:30 - 10:00 am

10:30 am - 12:15 pm

2:00 - 3:30 pm

4:00 - 5:45 pm

### Hyatt Ballroom North

Eye Movements: Mechanisms

Object Recognition

Spatial Vision I

Spatial Vision II

### Hyatt Ballroom South

Grouping and Segmentation I

Early Visual Processing: Receptive Fields

Attention Modulation of Sensory Signals: Physiology

Memory

## Monday, May 14

### Time

8:00 - 9:30 am

10:00 - 11:45 am

2:30 - 4:15 pm

### Hyatt Ballroom North

Biological Motion II

Visuomotor Control: Goal-Directed Hand Movements

Attention: Tracking and Shifting

### Hyatt Ballroom South

Early Visual Development

Lightness and Brightness

Face Perception: Development, Learning, and Expertise

## Tuesday, May 15

### Time

8:30 - 10:00 am

10:30 am - 12:15 pm

2:00 - 3:30 pm

4:00 - 5:45 pm

### Hyatt Ballroom North

Blindness, Amblyopia, Dyslexia, and Rehabilitation

Motion Mechanisms

Color, Luminance and Receptors

Binocular Vision: Rivalry and Mechanisms

### Hyatt Ballroom South

Shape, Picture, and Scene Perception

Attention to Locations and Features

Perceptual Learning IV

Attention: Selection Over Space and Time

## Wednesday, May 16

### Time

8:30 - 10:00 am

10:30 am - 12:15 pm

### Hyatt Ballroom North

Eye Movements: Cognitive II

Temporal Processing

### Hyatt Ballroom South

Face Perception: Emotion II

2D Motion II

# Travel Awards



## Elsevier/Vision Research Travel Awards

VSS congratulates this year's recipients of the 2007 Elsevier/ *Vision Research* Travel Award. The Travel Awards will be presented at the start of the Keynote Address on Sunday, May 13, 7:00 pm in the Hyatt Ballroom.



### **Maha Adamo**

*University of Toronto, Department of Psychology, Cognitive Neuroscience Laboratory*  
Advisor: Susanne Ferber

### **Seyed-Reza Afraz**

*Harvard University, Department of Psychology*  
Advisor: Patrick Cavanagh

### **Bahador Bahrami**

*University College London, Institute of Cognitive Neuroscience and Psychology Department*  
Advisors: Vincent Walsh, Nilli Lavie & Geraint Rees

### **Daniel Baldauf**

*Ludwig-Maximilians-University, Caltech*  
Advisors: Heiner Deubel & Richard A. Andersen

### **Jan Brascamp**

*Utrecht University and Helmholtz Institute, Department of Biology, Functional Neurobiology Lab*  
Advisors: Albert van den Berg & Raymond van Ee

### **Jonathan Cant**

*University of Western Ontario, Psychology Department & Neuroscience Graduate Program*  
Advisor: Melvyn A. Goodale

### **James Christensen**

*Ohio State University, Department of Psychology*  
Advisor: James T. Todd

### **Michael Frank**

*MIT, Department of Brain and Cognitive Sciences, Tedlab*  
Advisor: Edward Gibson

### **Jacqueline Fulvio**

*New York University, Department of Psychology*  
Advisor: Laurence T. Maloney

### **Julie Golomb**

*Yale University, Interdepartmental Neuroscience Program*  
Advisors: James Mazer & Marvin Chun

### **Sam Ling**

*New York University, Department of Psychology*  
Advisor: Marisa Carrasco

### **Philip John O'Herron**

*Johns Hopkins University, Department of Neuroscience Krieger Mind/Brain Institute*  
Advisor: Rüdiger von der Heydt

### **Jin Qian**

*University of Houston, College of Optometry*  
Advisor: Harold E. Bedell

### **Kelly Shen**

*Queen's University, Visual Information Processing Laboratory, Centre for Neuroscience Studies*  
Advisor: Martin Paré

### **Jed Singer**

*Brown University, Brain Science Program*  
Advisor: David Sheinberg

### **Kasey Soska**

*New York University, Department of Psychology*  
Advisors: Scott P. Johnson & Karen E. Adolph

### **Nicole Spotswood**

*University of California Davis, Center for Mind and Brain in the Department of Psychology, Vision and Action Lab*  
Advisor: David Whitney

### **Chris Striemer**

*University of Waterloo, Behavioral and Cognitive Neuroscience Division, Department of Psychology*  
Advisor: James Danckert

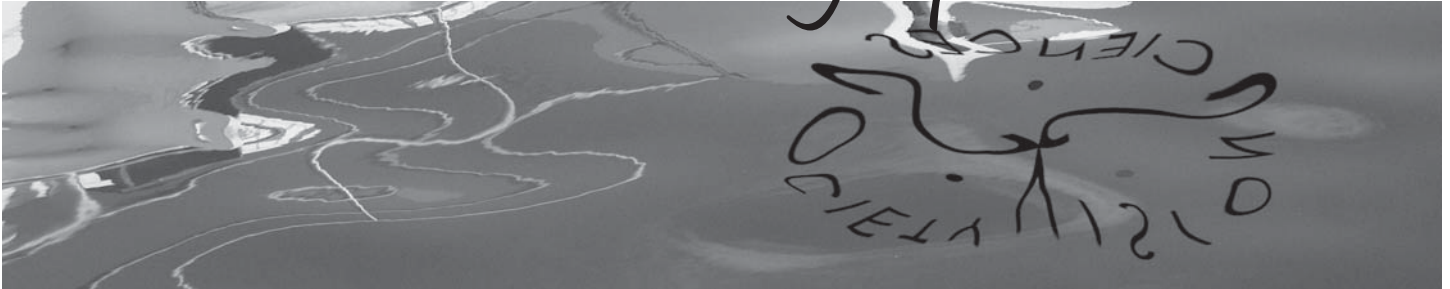
### **Timothy Vickery**

*Harvard University, Department of Psychology*  
Advisor: Yuhong Jiang

### **Edward Vul**

*Massachusetts Institute of Technology, Kanwisher Lab Dept. of Brain and Cognitive Science*  
Advisor: Nancy Kanwisher

# Member-Initiated Symposia



Symposium summaries are presented below. See the Abstracts book for individual presentation abstracts.

## Symposia Schedule Overview

**Friday, May 11, 1:00 - 3:00 pm**

Visual Organization and Computation, *Hyatt Salons A/B*  
Multivariate Decoding of Neural Representations in Electrophysiology and Functional Imaging, *Hyatt Salons E/F*  
Visual Plasticity in Abnormal and Damaged Adult Brains, *Hyatt Salons C/D*  
Neural Substrate of Bottom-up and Top-Down Visual Attentional Selection, *Hyatt Salons G/H*

**Friday, May 11, 3:30 - 5:30 pm**

How to Use Individual Differences to Isolate Functional, Neural and Genetic Mechanisms of Vision, *Hyatt Salons A/B*  
Natural Scene Understanding: Statistics, Recognition and Representation, *Hyatt Salons G/H*  
Neural Mechanisms of Depth Perception, *Hyatt Salons C/D*  
Classification Images in Vision Research, *Hyatt Salons E/F*

## Visual Organization and Computation

**Friday, May 11, 1:00 - 3:00 pm, Hyatt Salons A/B**

*Organizers: Sergei Gepshtein (Brain Science Institute, RIKEN) & Laurence T. Maloney (Psychology & Neural Science, NYU)*

### Symposium Summary

In many visual tasks, the goal is to draw accurate inferences about properties of the world. One potential source of relevant information are joint distributions of co-occurrence of features in the environment. Wilson Geisler and Jitendra Malik will describe two distinct approaches to measuring such prior distributions and modeling how a visual system might make use of them in perceptual organization. James Elder will then describe a coarse-to-fine Bayesian algorithm for perceptual organization. In his approach, candidate contours are extracted at a coarse scale and then used to generate spatial priors on the location of possible contours at finer scales. Jacob Feldman will describe an alternative model of spatial organization as a hierarchical ('tree') structure. A Bayesian approach to per-

ceptual organization then reduces to Bayesian estimation of this tree; the perceived organization will correspond to the tree that best explains the observed spatial configuration.

A fundamental challenge to research of perceptual organization is to discover how different factors interact to affect perception. Michael Kubovy will describe experimental work on perceptual grouping. He will show that in some static displays, such as dot lattices, emergent organizations (presumably generated by nonlinear processes) combine additively. He will discuss examples using multi-stable regular dots patterns and develop a mathematical model of perceptual organization of such stimuli.

Sergei Gepshtein will present a normative theory based on optimal allocation of neural 'resources', analogous to neo-classical economic theory. In this theory the visual system allocates resources to different conditions of stimulation according to the degree of balance between measurement uncertainties and stimulus uncertainties. He will describe how the theory predicts maximal-sensitivity and isosensitivity sets of human vision and how it helps to reconcile apparently inconsistent data on perceptual organization of dynamic stimuli.

The symposium will conclude with a guided discussion (Laurence T. Maloney).

### Presentations

- S1 **A Bayesian multi-scale model of perceptual organization** *James Elder & Francisco Estrada (York University, Canada)*
- S2 **Seeing the forest in a tree: Bayesian estimation of hierarchical spatial organization** *Jacob Feldman (Rutgers University)*
- S3 **Bayesian scene statistics and perceptual organization** *Wilson S. Geisler (University of Texas at Austin, USA)*
- S4 **Non-Bayesian normative theory of dynamic perceptual organization** *Sergei Gepshtein & Ivan Tyukin (Brain Science Institute, RIKEN)*
- S5 **Grouping by spatial distance is additive with other forms of static dissimilarity but not with distance in time** *Michael Kubovy (University of Virginia, USA)*
- S6 **Ecological statistics of perceptual organization** *Jitendra Malik (University of California at Berkeley, USA)*

## Multivariate Decoding of Neural Representations in Electrophysiology and Functional Imaging

Friday, May 11, 1:00 - 3:00 pm, Hyatt Salons E/F

Organizers: John-Dylan Haynes (Max Planck Institute for Cognitive and Brain Sciences) & Nikolaus Kriegeskorte (Laboratory of Brain and Cognition, National Institute of Mental Health)

### Symposium Summary

Neural representations are inherently a parallel, multi-unit phenomenon. In order to fully understand them, many channels should be measured simultaneously and the analysis should handle their multivariate complexity. This Symposium explores a current trend of convergence between neuroimaging and electrophysiology, in which multi-channel measurement and multivariate decoding are combined to address basic questions about neural representations. We bring together key researchers following this approach in the still largely separate neuroimaging and electrophysiology communities. The presentations will take a fresh look at the degree to which neural codes are sparse or distributed as well as at their conscious accessibility and temporal dynamics. Data presented stem from single-cell and multiunit recordings in humans and monkeys, local field potentials, as well as conventional and high-field/high-resolution fMRI. We will show how multi-channel measurement combined with multivariate decoding can dramatically increase the sensitivity to subtle effects and help bridge the gap between fMRI and cell recordings. Information theory and decoding have long been central to neuroscience. But only recently have they emerged as a powerful theoretical and data-analytical framework to deal with the increasing complexity of massively multi-channel data. This common theory-and-analysis framework will help integrate animal and human studies as well as neuroimaging and invasive cell recording.

### Presentations

S7 **Decoding conscious and unconscious perception from dynamic brain patterns** John-Dylan Haynes (Max Planck Institute for Cognitive and Brain Sciences)

S8 **Object recognition by decoding spikes and local field potentials** Gabriel Kreiman (Children's Hospital Boston, Harvard Medical School)

S9 **Discovering regional macropopulation codes for visual objects by information-based brain mapping** Nikolaus Kriegeskorte (Laboratory of Brain and Cognition, National Institute of Mental Health)

S10 **Distributed representations of faces and objects analyzed as multi-voxel patterns in fMRI** James Haxby (Princeton University)

S11 **Decoding visual inputs from human single cell recordings** Rodrigo Quiñan Quiroga (Department of Engineering, University of Leicester)

S12 **Tracking category-specific cortical representations during memory search** Sean M. Polyn (Department of Psychology, University of Pennsylvania)

## Visual Plasticity in Abnormal and Damaged Adult Brains

Friday, May 11, 1:00 - 3:00 pm, Hyatt Salons C/D

Organizers: Arash Sahraie (University of Aberdeen) & Krystal R. Huxlin (University of Rochester Medical Center)

### Symposium Summary

Structural re-organisation is well-described following pre-natal brain insults such as porencephalic cysts or brain tumours, and following damage early in post-natal development. As a result of extensive spontaneous re-organisation, the permanent deficits caused by such lesions are far less than those expected from identical damage in the adult brain. While most of the evidence to date favors the existence of significant functional plasticity in the adult visual system, conditions that have to be met to trigger functionally-useful changes in abnormal or damaged adult visual systems are not fully understood. This has given rise to significant controversy in the field. As part of this symposium, a panel of neuroscientists who use a wide range of experimental approaches, will discuss the types of changes in visual performance that can be attained following visuo-behavioral manipulations in abnormal or damaged visual systems. This phenomenon will be explored in several adult mammalian species, including humans. The panel will address the following specific questions: (1) Is adult visual plasticity fact or fallacy? (2) What forms does it take? (3) What conditions need to be met for it to occur? (4) Does physical damage to visual circuitry preclude significant plasticity in the adult - i.e. is greater plasticity attained in amblyopes or cases of monocular deprivation because the visual system is intact, albeit misconnected? It is hoped that insights gained from this symposium will assist us in attaining some consensus about the degree of plasticity that is inherent and/or inducible in the adult visual system. Such understanding is essential if we are to design more effective strategies to treat disorders of the visual system in our aging population.

### Presentations

S13 **Plasticity in human blindsight** Arash Sahraie (University of Aberdeen)

S14 **Improving global motion perception in the blind field of adult humans with V1 damage** Krystal R. Huxlin (University of Rochester Medical Center)

S15 **Improving vision in adult amblyopia by perceptual learning** Uri Polat (Goldschleger Eye Research Institute, Faculty of Medicine Tel Aviv University, Sheba Medical Center)

**S16 Reactivation of juvenile-like ocular dominance plasticity in the adult visual cortex** *Elizabeth M. Quinlan, Ph.D.* (Department of Biology Neuroscience and Cognitive Sciences Program University of Maryland)

**S17 Primate area V1 reorganization following retinal lesions: where do things stand?** *Stelios Smirnakis, M.D. Ph.D.* (Brigham and Women's Hospital, Department of Neurology)

### Neural Substrate of Bottom-up and Top-Down Visual Attentional Selection

**Friday, May 11, 1:00 - 3:00 pm, Hyatt Salons G/H**

*Organizer: Jan Theeuwes (Cognitive Psychology Vrije Universiteit Amsterdam)*

#### Symposium Summary

One of the most fundamental questions in vision is the extent to which we are able to exert control over what we select from the environment. Overt or covert selection may either be controlled by the properties of the stimulus field or by intentions, goals and beliefs of the observer. When an observer intentionally selects only those objects required for the task at hand, selection is said to occur in a top-down, voluntary, goal-directed manner. When specific properties present in the visual field determine selection independent of the observer's goals and beliefs, selection is said to occur in an involuntary, bottom-up, stimulus-driven manner. We hypothesize that bottom-up signals, mediated primarily by magnocellular visual inputs, combine with top-down signals at several cortical (e.g., frontal, parietal) and subcortical (e.g., basal ganglia, superior colliculus, thalamus) stages to guide spatial attention and target selection. Bottom-up and top-down controls of attention represent the interplay of exogenous (feedforward) and endogenous (feedback) neuronal activities within the cortex.

Over the last years, within several of the vision research disciplines, research efforts have been devoted to the very basic question of the control of visual selection. In this symposium we bring together researchers from diverse disciplines (physiology, modeling, psychophysics and cognitive neuroscience) each having their own unique view on this central research question. The different perspectives will lead to stimulating discussions and may result in a deeper understanding of the mechanism and neural substrates involved in top-down and bottom-up control of visual selection.

#### Presentations

**S18 Early bottom-up and later top-down attentional selection** *Jan Theeuwes (Cognitive Psychology Vrije Universiteit Amsterdam)*

**S19 Visuomotor transformations guiding overt and covert orienting** *Doug Munoz (Centre for Neuroscience Studies Queen's University)*

**S20 Top-down attention on the visuomotor processing without the primary visual cortex (V1); an experimental study in monkeys with unilateral lesion of V1** *Tadashi Isa (Developmental Physiology National Institute for Physiological Sciences)*

**S21 Beyond bottom-up: A computational model of task-dependent influences on eye position during natural vision** *Laurent Itti & Robert J. Peters (Computer Science University of Southern California)*

### How to Use Individual Differences to Isolate Functional, Neural and Genetic Mechanisms of Vision

**Friday, May 11, 3:30 - 5:30 pm, Hyatt Salons A/B**

*Organizer: Jeremy B. Wilmer (University of Pennsylvania)*

#### Symposium Summary

Individual differences provide a powerful source of information for fractionating and associating behavioral mechanisms and for tying them to their biological bases (Kosslyn et al, 2002; Plomin & Kosslyn, 2001). However, the study of individual differences in vision is still in its infancy. This symposium showcases recent work isolating basic functional and biological mechanisms of vision through a consideration of individual differences. This work encompasses a broad range of techniques (psychophysics, eye-tracking, event-related potentials, fMRI, behavioral genetics) as well as topic areas (motion, color, faces, objects, attention, stereopsis, contrast, oculomotor control, and visual working memory).

Individual differences are useful to researchers with a variety of goals: At the level of behavior, our speakers use individual differences to demonstrate that diverse aspects of vision, for example perception and action, rely upon common mechanisms; and that potentially seamless aspects of vision, for example face and object processing, rely upon distinct mechanisms. At the level of underlying biology, our speakers correlate individual differences with genetic and neural variation to uncover biological substrates of functions such as stereopsis and visual working memory.

It is worth emphasizing that individual differences not only inform us about basic functional and biological mechanisms. They also enhance our understanding of how such mechanisms vary, easing the translation of basic science for clinical use while helping to answer the question: "What is this visual mechanism good for?"

This symposium is the first demonstration of the broad utility of individual differences-based methods to vision science. Our target audience: Anyone who is curious about the origins or consequences of individual differences observed in their own research, or who wants to know what can be learned about basic visual mechanisms by systematically studying such differences. Attendees from a variety of content areas should come away with ideas for how to make use of individual differences in their own work.

#### Presentations

**S22 Cracking sensory codes using individual differences** *David H. Peterzell (University of California at San Diego)*

**S23 Faces and objects are processed by independent mechanisms: Evidence from Individual differences** Galit Yovel (Tel Aviv University)

**S24 Two distinct visual motion mechanisms for smooth pursuit, and a behavioral genetic study of stereopsis** Jeremy B. Wilmer (University of Pennsylvania)

**S25 Visual working memory capacity as an index of attentional control: A neurally-based individual differences approach** Edward K. Vogel (University of Oregon)

**S26 Individual differences in perceptual norms** Michael A. Webster (University of Nevada, Reno)

**S27 Developmental prosopagnosia** Ken Nakayama (Harvard University)

## Natural Scene Understanding: Statistics, Recognition and Representation

Friday, May 11, 3:30 - 5:30 pm, Hyatt Salons G/H

Organizers: Fei-Fei Li (Princeton University) & Aude Oliva (MIT)

### Symposium Summary

From oriented bars to isolated objects, the field of vision science is moving rapidly forward to uncover the mechanisms that enable the perception of our visual world. Natural scene understanding therefore stands as one of the most challenging and yet unsolved problems in vision: humans are able to ascribe meanings to complex natural images, achieving a remarkable level of understanding within a single glance and with little effort. Over the last decade, researchers have made substantial progress toward understanding the cognitive, neural and computational underpinning of scene analysis. In this symposium, 6 speakers from representative domains in the visual sciences will present an integrative view on the mechanisms and representation subtending natural image understanding. From computational analysis to studies of scene gist, each speaker will offer a multidisciplinary view in their presentation, with the aim of integrating classical theories with recent breakthroughs in the behavioral, cognitive neuroscience and modeling aspects of scene understanding.

Dr. Simon Thorpe's works using ERP studies on the speed of image categorization have challenged traditional theories of visual recognition. He will review the speed at which natural image analysis occurs in the brain, as well as introduce paradigms dedicated to evaluating the computational constraints of feed-forward analysis. Addressing the topic of image statistics from a cognitive neuroscience perspective, Dr. Bruno Olshausen will describe the fundamental role of image statistics in shaping brain mechanisms of natural image recognition. Next, leading the discussion to address semantic comprehension, Dr. Russell Epstein will portray the brain network involved in real world scene and place recognition based on fMRI studies. Dr. Irving Biederman will describe a cognitive neuroscience theory of how human emotion and preference shape our immedi-

ate perception of the natural world. Dr. Aude Oliva will review computational neuroscience accounts of scene gist understanding, and evaluate the role of spatial layout and objects in place recognition. Finally, Dr. Fei-Fei Li will further illustrate the striking robustness of natural scene and gist perception in behavioral studies, as well as present a computer vision model for scene categorization in a Bayesian framework.

### Presentations

**S28 Natural scene categorization: from humans to computers** Fei-Fei Li (Princeton University)

**S29 Building the gist of the scene from spatial envelope properties** Aude Oliva (MIT)

**S30 A neural basis of natural scene perceptual preference** Irvine Biederman (University of Southern California)

**S31 EEG and behavioral studies of object recognition in natural images** Bruno Olshausen (University of California, Berkeley)

**S32 Neural systems for visual scene recognition** Russel Epstein, Ph.D. (University of Pennsylvania)

**S33 Ultra-rapid scene processing: Temporal constraints and neural computation** Simone Thorpe, Ph.D. (Centre de Recherche Cerveau et Cognition – CNRS – University P. Sabatier Toulouse 3)

## Neural Mechanisms of Depth Perception

Friday, May 11, 3:30 - 5:30 pm, Hyatt Salons C/D

Organizer: Peter H. Schiller (Massachusetts Institute of Technology)

### Symposium Summary

Reconstruction of the third dimension in the visual scene from the two dimensional images formed on the retina is one of the central tasks of the visual system. To accomplish this several neural mechanisms have evolved that can process such depth cues as disparity for stereoscopic vision, motion parallax and shading. The past few years have provided us with significant new findings about how these cues are processed in the brain. The purpose of this symposium is to present some of the major new advances that have been made by outstanding investigators in the field. The speakers will present material based on both human and monkey psychophysical studies, on physiological studies carried out in monkeys, and will consider various relevant models of depth perception. The first speaker, Ian Howard, will review the evidence that depth can be created by monocular zones. The second speaker, Suzanne McKee, will describe how the images from the two eyes are combined to create a unique depth map and what accounts for the exquisite sensitivity to relative disparity. The third speaker, Ralph Freeman, will provide new facts about how single neurons in area V1 encode the fine resolution of stereoscopic images and how these findings bear on models of stereoscopic vision. The fourth speaker, Gregory DeAngelis, will describe the role of extrastriate area MT in stereoscopic depth perception. The last speaker, Peter Schiller,

will describe the role various retinal parallel channels play in stereopsis and motion parallax.

#### Presentations

**S34 What role do the parallel channels of the retina play in the processing of stereopsis and motion parallax?** *Peter H. Schiller (Massachusetts Institute of Technology)*

**S35 Stereoscopic phenomena that present difficulties for disparity-detection mechanisms** *Ian P. Howard (Centre for Vision Research, York University)*

**S36 Stereo matching and stereoacuity** *Suzanne P. Mckee (Smith Kettlewell Eye Institute)*

**The physiological basis of stereoscopic depth** *Ralph Freeman (University of California, Berkeley)*

**S37 Roles of area MT in coarse and fine stereopsis revealed through reversible inactivation** *Gregory C. DeAngelis (Washington University School of Medicine)*



## Classification Images in Vision Research

**Friday, May 11, 3:30 - 5:30 pm, Hyatt Salons E/F**

*Organizer: Dario Ringach (Department of Neurobiology and Psychology, UCLA)*

#### Symposium Summary

The use of stochastic stimuli has been a hallmark in electrophysiological studies of receptive fields in the visual system, from the retina to the visual cortex. In recent years, however, analogous methods have also found broad applicability in the design and analysis of psychophysical tasks.

A central goal of the symposium is to showcase the application of classification images in a wide range of studies of visual perception. The five talks proposed will address: (a) perceptual learning of Vernier acuity in amblyopia (Dennis Levi and Roger Li), (b) the processing and detection of textured surfaces (Jonathan Victor and Mary Conte), (c) the study of crowding in letter identification (Anirvan Nandy and Bosco Tjan), (d) the investigation of the information driving eye movements and the underlying attentional mechanisms of spatial neglect in human patients (Miguel Eckstein et al); and (e) the dynamics of contour grouping (Brian Keane, Hongjing Lu and Phil Kellman).

#### Presentations

**S39 Processing of low- and high-order image statistics studied by classification images extracted via regularized regression** *Jonathan D. Victor & Mary Conte (Department of Neurology & Neuroscience, Weill Med Col Cornell University)*

**S40 Eclectic classification image investigations** *Miguel Eckstein (Department of Psychology, University of California, Santa Barbara)*

**S41 Psychophysical Reverse correlation – a new tool for learning about learning in normal and amblyopic vision** *Denis Levi & Roger Li (School of Optometry, University of California, Berkeley)*

**S42 The nature of letter crowding as revealed by first- and second-order classification images** *Bosco Tjan & Arnivan Nandy (University of Southern California)*

**S43 Classification images of spatiotemporal illusory figures: Interpretations and implications** *Brian Keane, Hongjing Lu, & Phil Kellman (Department of Psychology, UCLA)*



# Demo Night



## 5th Annual Demo Night

Monday, May 14, 7:00 -10:00 pm,  
G.WIZ Science Museum

Please join us Monday night at the G.WIZ Science Museum for the 5th Annual VSS Demo Night, with a barbecue and refreshments to accompany the demonstrations.

Richard O. Brown and Arthur Shapiro have curated 25 demonstrations of visual phenomena by VSS members, highlighting the important roles demonstrations play in vision research and education. These demonstrations will be distributed throughout G.WIZ, amongst the museum's existing interactive scientific exhibits, which includes 35 exhibits on physics, math and perception on loan from the Exploratorium.

Meal tickets are required. Please wear your VSS badge for entry. Guests and family members of all ages are welcome. You must register your guests at the front entrance of the G.WIZ Science Museum to obtain their entry badges and meal tickets.

### Schedule of Events

- 7:00 – 9:00 pm Complimentary BBQ served on the grass at the back of G.WIZ
- 7:00 – 9:45 pm Outside and inside bars open - Beer and wine for \$3; sodas and water are free
- 7:00 – 10:00 pm Demos open inside G.WIZ
- 8:30 – 9:30 pm Complimentary dessert and coffee served inside G.WIZ



### Demonstrations

#### Digital Embryo Workshop

Mark Brady, Jay Hegde & Dan Gu, NDSU

Visitors will use the new Digital Embryo Workshop software to simulate various mechanisms in embryological development. The resulting objects are useful tools in the study of camouflage, object learning and object recognition.

#### LITE and Depth

Kenneth Brecher, Boston University

I will show some new JAVA applets from "Project LITE - Light Inquiry Through Experiments" and some real world devices (Swan cube, pseudoscope, tapered mirror kaleidoscope) that illuminate issues of depth perception.

#### Fast Faces – An Illusory Reversal Of Temporal Order

Richard Brown & Erik Thogersen, The Exploratorium

This demo combines several paradigms and phenomena to produce an illusion of reversed temporal order in a single location. When a purple square is embedded in a rapidly presented sequence of familiar faces, people commonly report that the face directly preceding the purple square was distinctly perceived as occurring after the purple square.

#### Aperture Induced Motion

Gideon P. Caplovitz, Dartmouth College

A grating drifting back and forth behind a rectangular aperture will appear to "bounce" up and down, depending on the relative angle between the orientations of the grating and aperture.

#### Stereo Depth Changes Without Changes in Disparity

Yu-Chin Chai & Bart Farell, Syracuse University

Here we demonstrate that 'what' matters for stereo depth perception, which has traditionally been regarded exclusively as a 'where' function. The demo shows modulation of stereoscopic depth due solely to changes in relative orientation.

### Deforming Grating and Other New Illusions

*Simone Gori & Enrico Giora, University of Padua*

We will present a new set of illusions where the surprising deformation of the image is due to the motion of the observer or to the motion of the stimuli.

### Geometric-Optical Illusions At Isoluminance!

*Kai Hamburger, Thorsten Hansen & Karl R. Gegenfurtner, Justus Liebig University*

Find out yourself whether geometric-optical illusions break down under conditions of isoluminance. At this demo you can interactively manipulate 9 geometrical-optical illusions shown in classical black-white and under isoluminance.

### 'Weaves'

*Kai Hamburger & Arthur G. Shapiro, University of Giessen & Bucknell University*

We present 'Weaves', a pattern that consists of intertwined horizontal and vertical bars. When the vertical and horizontal bars have different luminance levels (luminance-defined weaves), perceptual smudges arise at every other intersection. But when the bars have the same luminance levels (equiluminant weaves) the smudges arise at every intersection--just like the Herman grid.

### Visual Therapy Activities

*Paul Alan Harris & Susan Barry, Optometric Extension Program Foundation*

At this demo you can try for yourselves several activities used in visual therapy for developing binocularity. These will include tabletop and free-space activities, including the Brock String and yoked prism activities.

### Anamorphic Stereograms

*David Hoffman, Robin Held, Ahna Girshick, & Martin Banks, UC Berkeley*

We will show the influence of oblique viewing on perceiving conventional and unconventional stereo pictures. In the conventional case, the 3D scene appears to shear and change in depth, as expected from changes in the retinal images. In the other case, we correct the images so that as viewing position changes, the retinal images remain constant, and the perceived scene changes little if at all.

### Gradient-Offset Induced Motion

*Po-Jang Hsieh, Gideon Caplovitz & Peter Tse, Dartmouth College*

When a gradient stimulus, whose luminance contrast ranges gradually from white on one side to black on the other, is made to disappear all at once so that only the uniform white background remains visible, illusory motion is perceived.

### He is Looking at You

*Dr. Bernd Kersten & Ruth Walter, University of Bern*

Hollow face illusion: A very nice pair of paper-made hollow face figures.

### Classification of the Fraser-Wilcox Illusions

*Akiyoshi Kitaoka, Ritsumeikan University*

Four types of the optimized Fraser-Wilcox illusion will be demonstrated.



### Paradoxical Size Reduction in Dynamic Figure/Ground

*Lora T. Likova, Smith-Kettlewell Eye Research Institute*

A dynamically-defined figure on a static surround exhibits an illusory size change to appear smaller than its physical extent, while a static figure on a dynamic surround texture appears substantially larger. The size reduction in the dynamic relative to the static figure a paradoxical illusion that challenges conventional explanations at several levels of visual processing analysis.

### Paper Folding Demonstration Accompanied with Computer Animation

*Keh-Ming Lu & Alan S Tsaur, Asia University, Taiwan*

Continuous rotating Napoleon paper building blocks/tessellation

### Real-Time Algorithms for Visual Attention and Object Recognition Embodied in a Robotic Head

*Robert J. Peters, Lior Elazary, David Berg, Jonathan Harel, Christof Koch, & Laurent Itti, USC & Caltech*

A robotic head will make head and eye movements to follow the activity of people and objects in its surroundings, while learning and recognizing visual objects in real time. Viewers will be able to interact with the robotic head by showing new objects for it to learn.

## The Phantom Pulse

David Peterzell, UC-San Diego

The demo causes some people to experience what feels like a “phantom limb.” A real-time video image of the observer flickers rapidly between a normal image and a mirror-reversed image. When observers move one of their arms, the other, unmoving arm often begins to tingle, change temperature, and move involuntarily.

## Immersive Virtual Reality System Demonstration with Physiological Monitoring

Matthias Pusch, WorldViz LLC

Users will be invited to don a stereo head-mounted display for immersive virtual reality experiences of driving a racecar around a curvy track, and riding a glass elevator in a skyscraper. Simultaneously, finger sensors will measure their Galvanic Skin Responses (GSR) to precisely correlate physiological responses with visual stimuli.

## Where Has All The Motion Gone?" And Other Interactive Visual Effects

Arthur Shapiro, Emily Knight, & Tim Johnson, Bucknell University

We present stimulus configurations that create the impression of motion when the stimulus is blurred, but no impression of motion when the stimulus is not blurred. Why is there no motion in the unblurred condition, which must still contain motion signals at low spatial frequencies? We will also present a series of other interactive motion and lightness illusions.

## Tilt Effects in Chinese Characters

Shinsuke Shimojo & San-Yuan Lin, Caltech & National Taiwan University.

This demonstration will show tilt illusions in a display of Chinese characters.

## DIY Stereograms

David R. Simmons, University of Glasgow

Make simple stereograms and stereo glasses using coloured pencils, coloured filters and cardboard.

## Different Realities Using Visual, Auditory, and Audiovisual Stimulations

Yasuto Tanaka, NICT

When we watch video movies, we recognize the reality of the scene in a different manner as situations change, such as visual stimulation only, auditory stimulations only, and visual and auditory stimulations together. I will evaluate these situations by asking observers impressions as well as physical states such as heartbeat.

## Infinite Regress Illusion

Peter Ulric Tse & Po-Jang Hsieh, Dartmouth College

Fixate and watch a moving object move continuously away from fixation.

## The Induced Spider Web

Christopher Tyler, Smith-Kettlewell Eye Research Institute

Observation of a large uniform aperture within a field of high-frequency dynamic noise reveals that it does not appear uniform but is covered with a tracery of fine dynamic ‘threads’ extending across many degrees of visual space. The tracery lines appear to be near the limit of visual resolution, as though a manic spider were spinning threads to span the aperture in an attempt to fill it with visual structure.

## Action-Judgment Dissociation with the Ames Trapezoidal Window Illusion

Albert Yonas & Carl Granrud, University of Minnesota & University of Northern Colorado

The Ames Trapezoidal Window creates a powerful illusion that it is slanted in depth when it is, in fact, in the frontal plane. When viewed with two eyes it appears to be slanted, but when a viewer is asked to point to the edges of the window the illusion is greatly reduced. This action-judgment dissociation is a new finding.

## Marilyn Einstein

Aude Oliva, MIT

A hybrid face, combining the low spatial frequencies of Marilyn Monroe’s face with the high spatial frequencies of Albert Einstein’s face, appears to change identity as viewers move closer or further from it.



# Exhibitors



VSS would like to recognize the following companies who are exhibiting at VSS 2007. Thank you for your participation and support.

## Exhibit Hours

Friday, May 11, 5:45 – 8:45 pm

Saturday, May 12, 8:30 am – 4:00 pm

Sunday, May 13, 8:30 am – 4:00 pm

Monday, May 14, 8:00 am – 4:00 pm

Tuesday, May 15, 8:30 am – 4:00 pm

All exhibits are located in the Municipal Auditorium.

## SR Research Ltd.

SR Research, makers of the EyeLink Hi-Speed eye tracker line, have been developing advanced eye tracking technologies since 1992. The new EyeLink 1000 is a high resolution 1000 Hz video-based eye tracker available in either a remote or mirrored optics configuration. The EyeLink II is a head-mounted 500 Hz high-speed binocular eye tracker with ultra low noise and extremely high spatial resolution. Please visit our website at <http://www.sr-research.com> for details on our eye tracking hardware and software product range.



## SensoMotoric Instruments

SensoMotoric Instruments designs advanced video eye tracking systems that combine ease of use and flexibility with advanced technology. SMI products offer the ability to measure gaze position, saccades, fixations, pupil size, torsion, etc. This includes fully remote systems, binocular high-speed/high-precision, and FMRI/MEG compatible systems.

## Motion Imaging Corporation

Motion Imaging Corporation offers high-performance, cost effective and easy-to-use tracking systems. We do this by integrating software and hardware to create "World Class" digital imaging and motion analysis systems.

## Arrington Research, Inc.

Arrington Research has been providing reliable affordable eye trackers for the research market worldwide for over 10 years. ViewPoint EyeTracker® systems are the easiest and best value available and include light-weight head mounted, HMD and head fixed systems. All systems include a Software Developers Kit (SDK), real-time Ethernet & serial communication, built-in stimulus presentation, post-hoc data analysis tools, a MATLAB toolbox, many other 3rd Party product interfaces and examples.

### The MIT Press

The MIT Press publishes many books and journals dedicated to the vision sciences, visual neuroscience and cognitive science, perception and related fields. Please visit our exhibit area to receive a 20% discount on our newest and most relevant titles in the field including: Cabeza/ *The Handbook of Functional Neuroimaging of Cognition*, Second Edition; Heckenlively/ *Principles and Practice of Clinical Electrophysiology of Vision*, Second Edition; Julesz/ *Foundations of Cyclopean Perception*; and Noe/ *Action in Perception*, new to paperback.

### Oxford University Press

Oxford University Press is the world's oldest publisher in the English language. Oxford University Press has stood for high-quality non-fiction books for centuries. OUP is the largest and one of the most commercially savvy university presses; our commitment to scholarly publishing is also unmatched. Oxford also has the advantage of being one of the very few truly global publishing houses. We are a worldwide organization connected by over 45 branch offices, associated companies, and agents that are actively engaged in selling books of U.S. origin. Please visit our booth to see the latest titles in vision science and neuroscience and receive 20% off all our titles.

### WorldViz

WorldViz is an industry leader in interactive virtual reality solutions. The company's flagship products are VIZARD, the VR communities favored interactive 3D content creation software, and PPT X4, the most cost effective wide-area tracking system currently available. WorldViz provides high quality, low-cost immersive 3D products to

researchers, educators, designers, manufacturers, and other professionals, integrating all common VR products on the market and delivering complete turnkey solutions.



### ARVO

Established in 1928, ARVO is a membership organization of more than 11,300 eye and vision researchers from over 70 countries. The Association encourages and assists its members and others in research, training, publication, and dissemination of knowledge in vision and ophthalmology. ARVO's headquarters are located in Rockville, MD. For more information about ARVO, log on to the Association's Website, [www.arvo.org](http://www.arvo.org).

### 3rd Annual Educational Outreach Event

Saturday, May 12, 12:00 pm,  
G.WIZ Science Museum

Vision Sciences Society and the G.WIZ Science Museum are proud to present a public lecture held at the G.WIZ Science Museum. The event is for the Sarasota community, but VSS attendees are also invited to attend. Our goal is to share highlights of vision science with the community that hosts our meeting.



### Ione Fine, Ph.D.

University of Washington

### What You Won't Learn from *Cosmopolitan Magazine*: Ten Tips for Women in Science

Dr Ione Fine will discuss her experiences and the obstacles that remain for women scientists, as well as passing on some very useful advice that she has been given by successful women scientists over the course of her career.

# Attendee Resources



## **ATM**

An ATM is located in the hotel's main lobby.

## **Baggage Check**

Bags can be checked with the Bell hop in the main lobby.

## **Business Center**

The Hyatt Business Center is located near the reception desk in the upper lobby and is open 24 hours a day. An Internet-accessible terminal available for a charge.

## **Child Care**

Child care may be arranged through the Hyatt Hotel. The standard rate is \$12/hour for one child, availability is limited, and is on a first come first serve basis. See the Meeting Registration desk for more details. Parents and guardians are required to perform their own reference checks and arrange child care independently. VSS is not responsible for child care or for the quality of care given.

## **Copying and Printing**

Copying and printing can be done at Hyatt Business Center, located near the reception desk in the upper lobby

The nearest FedEx Kinko's is approximately 2.5 miles away at 1901 S. Tamiami Trail.

## **How to Contact Us**

If you need to reach VSS or meeting personnel while at the meeting, call ext. 1422 from a house phone, or from outside the hotel, call 1-941-953-1234, ext. 1422.

## **Lost and Found**

Lost and found is located at the Meeting Registration desk in the Hyatt Ballroom Foyer.

## **Message Center**

Messages for registrants can be left and retrieved at the Registration Desk. Bulletin boards will be available in the Ballroom Foyer and the Municipal Auditorium for announcements and job postings.

## **Parking**

Plenty of self-parking is available inside the garage and in back of the Hyatt Hotel. Valet parking is available for \$17.00 per night.

Parking is available in several parking lots surrounding the Municipal Auditorium.

## **Shipping**

To ship your poster or other items home from the meeting, ask for the Concierge at the front desk of the Hyatt.

## **Food Service at the Hyatt**

Complimentary coffee and tea will be available each morning in the Hyatt Ballroom Foyer. Coffee, tea and sodas will also be served each afternoon between afternoon talk sessions, and on Monday afternoon immediately following the Business Meeting.

Look for a coupon in your attendee packet – redeemable at Café Vision or the Patio Grill.

### **Café Vision**

Café Vision is located in the Hyatt Ballroom Foyer, and features breakfast items, lunch selections, snacks, coffee and cold beverages. Breakfast items will be available from 7:30 – 11:00 am Saturday through Wednesday; lunch selections 11:30 am – 2:00 pm Saturday through Tuesday.

Hours:

*Friday, 11:00 am – 5:00 pm, lunch and snacks*  
*Saturday, 7:30 am – 6:00 pm, breakfast, lunch and snacks*  
*Sunday, 8:00 am – 7:00 pm, breakfast, lunch and snacks*  
*Monday, 7:30 am – 4:30 pm, breakfast, lunch and snacks*  
*Tuesday, 8:00 am – 6:00 pm, breakfast, lunch and snacks*  
*Wednesday, 8:00 am – 12:30 pm, breakfast and snacks*

### **Patio Grill**

The Patio Grill features hamburgers, cheeseburgers and hot dogs grilled to perfection on an outdoor grill.

Hours:

*Saturday - Tuesday, 11:30 am – 2:00 pm, located outside the*  
*Boathouse entrance*

**Scalini Restaurant**

Scalini offers a gorgeous marina view and a sumptuous menu of choice breakfast items, both a' la carte and buffet style. Their award-winning champagne Sunday brunch continues to dazzle with a combination of breathtaking views, personalized service and cutting edge cuisine.

Hours:

*Monday - Saturday, Breakfast served from 6:30 am – 11:00 am*  
*Sunday, Brunch served from 11:00 am – 2:00 pm*

**Boathouse Restaurant**

Situated on stilts in our private marina, a perfect place to enjoy a delicious burger or sip your favorite beverage.

Hours:

*Sunday, Breakfast served from 6:30 am – 11:00 am*  
*Sunday - Thursday, Lunch served from 11:00 am – 5:00 pm*  
*Sunday - Thursday, Dinner served from 5:00 pm – 11:00 pm*  
*Friday - Saturday, Dinner served from 5:00 pm – 12:00 am*

**Hurricane Hut**

Located poolside, this dwelling can serve all of your favorite tropical concoctions while you concentrate on your tan.

Hours:

*11:00 am – 4:00 pm daily, weather permitting*

**Tropics on the Marina**

Hyatt lobby lounge and bar.

Hours:

*Monday - Saturday, 4:00 pm – 2:00 am*

**Room Service**

Hours:

*Breakfast served from 6:00 am – 11:00 am*  
*Dinner served from 4:00 pm – 10:00 pm*

**Food Service at Municipal Auditorium****Bella Café**

The Bella Café will be serving a wide selection of fresh, healthy and delicious breakfast, lunch & snack items to keep you energized and “on the go” throughout the day.

Breakfast items include their famous breakfast pizza, fresh cut fruit, cereal, juices & gourmet coffee. For lunch you have a choice of salads, sandwiches, and hot food specials. A variety of snack bars and energy drinks are available all day.

Hours:

*Saturday - Tuesday, 8:00 am – 6:00 pm*  
*Wednesday, 8:00 am – 12:00 pm*

**Internet Access****Cyber Vision**

Cyber Vision, a complimentary wireless Internet café, is available in the Municipal Auditorium mezzanine (upstairs). It offers a comfortable, relaxing setting to use your laptop to check email, and chat with friends. Food and drinks are allowed.

To connect to the Internet, you can select any of the wireless routers that your computer automatically detects in the Municipal Auditorium. To help distribute the connection load and improve performance, we ask that you select the wireless network indicated on signs at the location where you are seated. A limited number of connections will also be available.

Hours:

*Friday, 5:45 – 8:45 pm*  
*Saturday, 8:30 am to 6:30 pm*  
*Sunday, 8:30 am to 6:30 pm*  
*Monday, 8:00 am to 6:30 pm*  
*Tuesday, 8:30 am to 6:30 pm*  
*Wednesday, 8:30 am to 1:00 pm*

**T-Mobile HotSpot**

The Hyatt is a T-mobile hotspot and wireless Internet is available in guest rooms and public areas, including Scalini's, Tropics, and the upper and lower lobbies. T-mobile subscribers will automatically have access; others can sign up. Daily, monthly, or by-the-minute (pre-paid) plans are available. See [http://hotspot.t-mobile.com/services\\_plans.htm](http://hotspot.t-mobile.com/services_plans.htm) for details.

**Free Internet Terminals**

Three laptop computers with free Internet access are provided in the Ringling Room, located off of the Hyatt lower lobby. Please be courteous and limit your time if others are waiting.

Hours:

*Friday, 11:00 am – 10:00 pm*  
*Saturday - Tuesday, 8:00 am – 10:00 pm*  
*Wednesday, 8:00 am to 1:00 pm*



# Presenter Information



## Speaker Information

The Hyatt Ballrooms are equipped with a data/video projector and projection screen. Presentations can be made from your Mac or PC laptop, or Mac and PC computers that will be provided. When using the provided computers, please bring your presentation on a CD or USB flash device. PowerPoint and Adobe Acrobat are installed on the computers. A technician will be present in each room to handle any technical problems that may arise.

Please arrive at the Ballroom no less than 30 minutes before the start of your session. A/V technicians will be available all day in both the North and South Hyatt Ballrooms; presenters are welcome to test their presentations between talk sessions. Please give priority to presenters whose talk is scheduled for the subsequent session.

### Speaker Ready Room

A Speaker Ready room is available for speaker to rehearse their presentation. The Speaker Ready room is equipped with one Windows laptop and one Macintosh laptop with Microsoft Office applications installed. No Internet access is provided in the Speaker Ready room. The Speaker Ready room is in the Palm Room Friday through Sunday, and in the Florida Room Monday through Wednesday. Both rooms are located off of the Hyatt lower lobby.

### Hours:

*Friday, 11:00 am to 6:00 pm in the Palm Room*  
*Saturday, 8:00 am to 6:00 pm in the Palm Room*  
*Sunday, 8:00 am to 6:00 pm in the Palm Room*  
*Monday, 7:30 am to 6:00 pm in the Florida Room*  
*Tuesday, 8:00 am to 6:00 pm in the Florida Room*  
*Wednesday, 8:00 am to 1:00 pm in the Florida Room*

## Poster Information

All poster sessions are located in the Municipal Auditorium. Posters should be put up at the beginning of a session and taken down at the end. Authors are expected to be present at their posters during the entire "Author Presents" time, but may be there longer. See Poster Schedule on page 5 for author presents times.

Please be courteous and take down your poster promptly at the end of the session, so the board is empty when the next presenter arrives to put up his or her poster.

Push pins are available for your use and are located at the Meeting Registration desk and the Municipal Auditorium lobby.

## Don't Miss Club Vision

*Tuesday, May 15, 9:00 pm – 1:00 am,  
Hyatt Ballroom South*

Each year, the climax of the VSS social program takes place on the last night of the conference. In addition to a great sound system, special lighting effects, a cash bar, this year's Club Vision will feature professional DJ, Jonny B. Good.

The wearing of glowing or flashing accessories has become a tradition for this event and we will again be distributing free glow-in-the-dark necklaces and bracelets at the event. We encourage you to also bring your own creative accessories.

Dance and party with us until 1:00 am.



# 2008 Meeting



## VSS Moves to the Naples Grande Resort in 2008

May 9-14, 2008, Naples Grande Resort & Club  
Naples, Florida

The eighth annual meeting of the Vision Sciences Society will be held at the beautiful and recently renovated Naples Grande Resort & Club in Naples, Florida. The Naples Grande features 474 recently refurbished deluxe guest rooms and over 48,000 square feet of function space, which for the first time in VSS history, will allow all meeting functions, including all poster and talk presentations, to be held in the same facility.



The resort's large pool area features two pools, waterfalls and a water slide. Private poolside cabanas can be reserved that include television and Internet access. The poolside Palm Terrace Pool Bar & Grill provides an informal outdoor bar where swimmers, sunbathers, and other guests can gather for their favorite poolside beverages and light luncheon. Access to the beach is provided by shuttles that run continuously from 8:00 am to dusk. At the beach is a restaurant and equipment rentals.

An impressive variety of shopping, dining, and entertainment can be found close to the Naples Grande and in Naples's world-renowned and upscale 5th Avenue South and 3rd Street South shopping areas located in Old Naples.

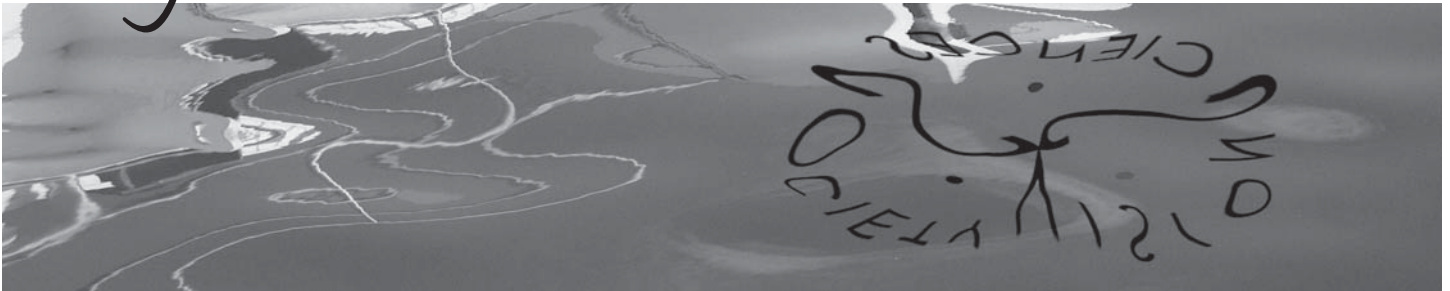
The resort's main restaurant, Aura, features a world-class menu and is managed by the recognized head chef, Chef Jeff. The new Strip House restaurant, already named "One of America's Greatest Steak Houses" by GQ Magazine, will be completed this spring. The lobby area is dominated by a large bar with generous meeting space and tables available to gather and chat.

For more information, see the Naples Grande website: [www.NaplesGrande.com](http://www.NaplesGrande.com). See your attendee bag for a flyer describing the Naples area. More information can be found online at [www.ParadiseCoast.com](http://www.ParadiseCoast.com).

We hope you will join us in 2008 to experience our inaugural meeting year at this new and exciting venue.



# Program Schedule



See the Talk Schedule on page 8 for an overview of the schedule talks. Also see the Poster Schedule on pages 6 and 7 for times that poster authors are required to set up, present, and take down.

Key: E79 indicates the poster number (poster will be presented in session E on board number 79). For talks, the poster number is replaced with the talk time. **608** indicates the sequential abstract number. The Topic Index and Author Index use this unique number to identify abstracts in the Program Schedule.

## Poster Sessions, Friday, May 11

### POSTER SESSION A

Friday, May 11, 5:45 - 8:45 pm,  
Municipal Auditorium

### Face Perception: Experience and Context

Author Presents: 7:15 - 8:45 pm

A1 **101** View-invariant representation of unfamiliar faces in the fusiform face area *Galit Yovel, Inbal Bartal*

A2 **102** fMR-adaptation reveals a view-invariant representation for familiar faces in the fusiform face area *Timothy Andrews, Michael Ewbank*

A3 **103** Our own faces: perceiving fluctuating asymmetry in the highly familiar objects *Kazuya Ishibashi, Shinichi Kita*

A4 **104** The importance of spatial frequency and familiarity in face recognition *Karin Pilz, Heinrich Bülthoff, Quoc Vuong*

A5 **105** Sex matters when you ask the right question: What affects eye movements in face comparison tasks? *Regine Armann, Isabelle Buelthoff*

A6 **106** Influence of encoding context on face recognition *Isabelle Bülthoff, Quoc Vuong*

A7 **107** The role of surface and shape information in the other-race face effect *Caroline Michel, Bruno Rossion, William Hayward, Isabelle Buelthoff, Quoc Vuong*

A8 **108** Women, but not men, prefer to fixate on the right side of a face *Joan Chiao, Steven Franconeri*

A9 **109** Jane and Ling: Holistic Processing and Sensitivity to the Spacing of Features in Own- versus Other-race Faces *Natalie Elms, Catherine Mondloch, Daphne Maurer*

A10 **110** The face of race: Revealing the visual prototype of Black and White faces in Caucasian subjects *Daniel Fiset, Brandon Wagar, James Tanaka, Frederic Gosselin, Daniel Bub*

A11 **111** Face adaptation does not improve perceptual saliency *Minna Ng, Geoffrey Boynton, Ione Fine*

A12 **112** Squirrel monkeys' (*Saimili sciureus*) peculiar facial recognition in the discrimination between own and other species. *Ryuzaburo Nakata, Yoshihisa Osada*

A13 **113** Universality and cultural specificity in social dominance perception: Effects of gender and culture on facial judgments *Donna Bridge, Zhang Li, Michelle Tsao, Joan Chiao*

A14 **114** What drives the political gender gap?: The role of gender on facial judgments of politicians *Nicholas E. Bowman, Joan Y. Chiao*

A15 **115** Who's looking at you? Gender and familiarity modulate gaze cueing. *Jocelyn L. Sy, Barry Giesbrecht*

A16 **116** Associating reward and loss with faces: Effects on rapid face recognition *Jennifer O'Brien, Jane E. Raymond*

A17 **117** Self-range defined by gaze perception is robust against the size and viewing distance variations. *Yuko Isogaya, Kazushi Maruya, Yutaka Nakajima, Yusuke Tani, Takao Sato*

A18 **118** The development of face discrimination skill in infants *Yumiko Otsuka, So Kanazawa, Masami Yamaguchi, Hervé Abdi, Alice O'Toole*

A19 **119** Infants' brain activity on perception of different view faces using Near-infrared spectroscopy *Emi Nakato, Yumiko Otsuka, Akira Midorikawa, Masami K Yamaguchi, Ryusuke Kakigi*

### Eye Movements: Cognitive I

Author Presents: 5:45 - 7:15 pm

A20 **120** Effect of training to an area-cue on human saccadic eye movements. *Olga Savina, Andre Bergeron, Daniel Guitton*

A21 **121** Dependence of Fixational Saccades on the Visual Task and Image Fading Conditions *Martina Poletti, Michele Rucci*

A22 **122** Eye movements for active learning of objects *Thomas Tanner, Roland Fleming, Heinrich Bülthoff*

- A23 **123** Inefficient eye movements correlate with difficulties in perceiving global stimuli in Balint's syndrome *Kirsten A. Dalrymple, Walter F. Bischof, David Cameron, Jason J.S. Barton, Alan Kingstone*
- A24 **124** More efficient scanning for familiar faces *Jennifer J. Heisz, David I. Shore*
- A25 **125** Gaze duration differences during a complex scene color preference test occur based on identical vs. dissimilar scenes. *John Pospisil, Kelly Rutan*
- A26 **126** Mondrian, Eye Movements, and the Oblique Effect *James Schirillo*
- A27 **127** Task dependence of space-time statistics at point of gaze revealed by eye tracking in natural wooded environment *Jeff Pelz, Constantin Rothkopf, Christopher DeAngelis*
- A28 **128** Influence of perceived depth in a reverse perspective stimulus on vergence *Dagmar Wismeijer, Raymond van Ee, Casper Erkelens*
- A29 **129** Relating contrast statistics at fixation location to navigational control law *Constantin Rothkopf, Dana Ballard*
- A30 **130** Saliency maps and ultra-rapid choice saccade tasks *Simon Thorpe, Sébastien Crouzet, Holle Kirchner*
- A31 **131** The role of awareness in saccadic conditioning *James Tse, Thomas Baker, Scott Adler, Peter Gerhardstein*
- A32 **132** Control of sensorimotor variability *Laurent Madelain, Lucie Champrenaut, Alan Chauvin*

## 2D Motion I

Author Presents: 5:45 - 7:15 pm

- A33 **133** "Motion streaks" improve fine direction discrimination *Deborah Apthorp, David Alais, Peter Wenderoth*
- A34 **134** Effect of motion smear on perceived speed in low luminance *Maryam Vaziri Pashkam, Patrick Cavanagh*
- A35 **135** Speed perception across variations in spatiotemporal frequencies in apparent motion stimuli *Murthy Bhavaraju, Ennio Mingolla*
- A36 **136** Frames of reference for perceiving motion direction in the human visual system *Mario L. Ruiz-Ruiz, Julio C. Martinez-Trujillo*
- A37 **137** Transparent-motion detection requires bimodal population activity *John A. Greenwood, Mark Edwards*
- A38 **138** The Development of Sensitivity to First- and Second-order Pattern versus Motion *Vickie Armstrong, Terri Lewis, Daphne Maurer*
- A39 **139** Effects of Flicker on Perceived Object Velocity *Michael Disch, Karen De Valois*
- A40 **140** Time-to-passage judgments reflect naive physics: The cases of representational gravity and friction *Yuki Yamada, Mai Yamaguchi, Kayo Miura*

## Perceptual Learning I

Author Presents: 5:45 - 7:15 pm

- A41 **141** Action video game playing alters early visual processing *Renjie Li, Uri Polat, Daphne Bavelier*
- A42 **142** Action videogame playing improves Bayesian inference for perceptual decision-making *C. Shawn Green, Alexandre Pouget, Daphne Bavelier*
- A43 **143** Multidimensional Visual Statistical Learning *Phillip Isola, Nicholas Turk-Browne, Brian Scholl*
- A44 **144** Subliminal visual feature is learned better when spatially closer to attended task *Shigeaki Nishina, Aaron Seitz, Mitsuo Kawato, Takeo Watanabe*
- A45 **145** While V1 activity enhancement that occurs immediately after PL training is nullified due to consolidation, the performance enhancement sustains. *Yuko Yotsumoto, Takeo Watanabe, Yuka Sasaki*
- A46 **146** Tracking changes in cortical responses as a function of perceptual practice *Michael Wenger, Christine Kapelewski, Justin Eroh*
- A47 **147** The effect of age on perceptual learning of sub-threshold stimuli *Rui Ni, Takeo Watanabe, George J. Andersen*
- A48 **148** Sleep dependent learning in contour integration *Patricia Gerván, Ilona Kovács*
- A49 **149** Covert attention strengthens, speeds and maintains perceptual learning *Anna Marie Giordano, Marisa Carrasco, Abby Rosenbaum*
- A50 **150** Can stimulus-induced affective states influence the rate of PL? *Noah Sulman, Thomas Sanocki*

## Rivalry and Bi-stability I

Author Presents: 7:15 - 8:45 pm

- A51 **151** Attenuation of the pupillary response during interocular suppression *Eiji Kimura, Satoru Abe, Ken Goryo*
- A52 **152** Increase of perceived speed accompanying onset of interocular suppression *Tomas Knapen, Joel Pearson, Randolph Blake, Raymond van Ee*
- A53 **153** Sequential dependency in percept durations for binocular rivalry *Loes van Dam, Rene Mulder, Andre Noest, Jan Brascamp, Bert van den Berg, Raymond van Ee*
- A54 **154** Identical rivalry dynamics for monocular, stimulus and binocular rivalry *Jeroen J.A. van Boxtel, Tomas Knapen, Raymond van Ee, Casper J. Erkelens*
- A55 **155** Aging and the depth of binocular rivalry suppression *J. Farley Norman, Hideko F. Norman, Kristina Pattison, M. Jett Taylor, Katherine Goforth*
- A56 **156** Predicting the spatial origin of a dominance wave in binocular rivalry *Chris Paffen, Marnix Naber, Frans Verstraten*
- A57 **157** Perceptual and mnemonic contents of mental imagery revealed by binocular rivalry *Joel Pearson, Colin Clifford, Frank Tong*

A58 **158** Temporal frequency and contrast tagging bias the type of competition in interocular switch rivalry *Michael Silver, Nikos Logothetis*

A59 **159** The speed and spreading of binocular rivalry dominance from boundary contours *Yong Su, Teng Leng Ooi, Zijiang J. He*

A60 **160** Illusory boundary contours affect binocular rivalry and depth perception *Eric Van Bogaert, Teng Leng Ooi, Zijiang J. He*

A61 **161** The roles of boundary contour and stimulus onset asynchrony in triggering binocular rivalry alternation *Jingping Xu, Zijiang J. He, Teng Leng Ooi*

A62 **162** Staying Focussed: The function of suppression during binocular rivalry? *Thomas Wallis, Derek Arnold*

A63 **163** Binocular rivalry and head-worn displays *Marc Winterbottom, Robert Patterson, Byron Pierce*

A64 **164** Processing of Fearful Faces Outside of Awareness *Eunice Yang, David Zald, Randolph Blake*

### 3D Perception: Cue Integration

Author Presents: 7:15 - 8:45 pm

A65 **165** Newly recruited cue trades against pre-existing cues during the construction of visual appearance *Qi Haijiang, Benjamin Backus*

A66 **166** Bayesian model of cue combination for ambiguous stimuli *Benjamin Backus*

A67 **167** Visuo-haptic adaptation: the role of relative reliability *Johannes Burge, Ahna R. Girshick, Martin S. Banks*

A68 **168** Bayesian cue combination: coupling of disparity-texture information compared to coupling of visual-haptic information *Ahna R. Girshick, Johannes Burge, Martin S. Banks*

A69 **169** Grasping for cues: Visual cue integration for object manipulation *Hal S. Greenwald, David C. Knill*

A70 **170** Manual control is effective in disambiguating in kinetic depth effect *Masahiro Ishii, Masaaki Todo, Kazuya Yamashita*

A71 **171** Joint effects of height-in-the-picture-plane and distance-relative-to-the-horizon in pictorial depth perception *Jonathan Gardner, Stephen Palmer*

A72 **172** Dynamics of Registered Convergence *Glen McCormack, Tyler Lowe, Li Deng*

A73 **173** Curvature Contrast Occurs After Cue Combination *Katinka van der Kooij, Susan te Pas*

### Cortical Receptive Fields and Perception

Author Presents: 7:15 - 8:45 pm

A74 **174** Abstract moved to Early Visual Processing: Receptive Fields

A75 **175** Voltage-sensitive dye imaging of collinear patterns in the visual cortex of a behaving monkey *Elhanan Meirovithz, Yoram Bonne, Uri Werner-Reiss, Inbal Ayzenshtat, Guy Saban, Hamutal Slovin*

A76 **176** TimeCourse of Surround Suppression in V2 Neurons of Macaque Monkeys *Jianliang Tong, Bin Zhang, Jianghe Zheng, Earl L. Smith III, Yuzo M. Chino*

A77 **177** Mature Transient Responses of V2 Neurons in 2-Week-Old Infant Monkeys *Bin Zhang, Jianghe Zheng, Earl Smith, Yuzo Chino*

A78 **178** The development of local connections in V1 and V2 of macaque monkeys *Peter Kaskan, Mary Baldwin, Bin Zhang, Yuzo Chino, Jon Kaas*

A79 **179** Estimation of voxel receptive fields in human visual cortex using natural images *Kendrick Kay, Thomas Naselaris, Jack Gallant*

A80 **180** BOLD fMRI Response to Local Neural Inhibition *Jennifer F. Schumacher, Cheryl A. Olman*

A81 **181** Learning simple and complex cells-like receptive fields from natural images: a plausibility proof *Timothée Masquelier, Thomas Serre, Simon Thorpe, Tomaso Poggio*

A82 **182** Responses of single neurones in the middle temporal area (MT) to kinetic contours: implications for understanding the physiological basis of form cue invariance *Leo Lui, Anouska Dobiecki, James Bourne, Marcello Rosa*

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## Talk Sessions, Saturday, May 12

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### TALK SESSION

Saturday, May 12, 8:30 - 10:00 am,  
Hyatt Ballroom South

### Perceptual Learning II

Moderator: Aaron Seitz

8:30 **183** A test of the sensorimotor theory of visual calibration *Bruce Bridgeman*

8:45 **184** Transfer (vs. specificity) following different amounts of perceptual learning in tasks differing in stimulus orientation and position. *Pamela E. Jeter, Barbara Anne Doshier, Shiao-Hua Liu*

9:00 **185** Effect of reward on perceptual learning *Dongho Kim, Aaron Seitz, Takeo Watanabe*

9:15 **186** Brain activity related to consolidation of perceptual learning during sleep *Yuka Sasaki, Yuko Yotsumoto, Shinsuke Shimojo, Takeo Watanabe*

9:30 **187** Location specificity in perceptual learning: A revisit *Cong Yu, Stanley Klein, Dennis Levi*

9:45 **188** Transient attention potentiates perceptual learning *Marisa Carrasco, Anna Marie Giordano, Christine Looser*

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### TALK SESSION

Saturday, May 12, 8:30 - 10:00 am,  
Hyatt Ballroom North

### 3D Perception

Moderator: Marc Ernst

8:30 **189** Kinesthetic Feedback Helps Disambiguate 3D Structure-from-motion *Bo Hu, David Knill*

8:45 **190** Integration of alternating cues to slant *Massimiliano Di Luca, Marc Ernst*

- 9:00 **191** Does the visual system extract “keyframes” from dynamic object sequences? *Benjamin Balas, Pawan Sinha*
- 9:15 **192** How long does it take to adjust a weight? *Marc Ernst, Massimiliano Di Luca, David Knill*
- 9:30 **193** Perceived curvature in depth: a test of cue combination models using motion and binocular disparity. *Kevin J. MacKenzie, Richard F. Murray, Laurie M. Wilcox*
- 9:45 **194** 3-D curvature aftereffects invariant to texture pattern *Andrea Li, Qasim Zaidi*

**TALK SESSION**

Saturday, May 12, 10:30 am - 12:15 pm,  
Hyatt Ballroom South

**Global Motion and Motion Integration**

Moderator: Constance Royden

- 10:30 **195** Binocular integration of pattern motion signals by MT neurons and by human observers *Chris Tailby, Najib Majaj, Tony Movshon*
- 10:45 **196** Motion opponency in area MT of the macaque is mostly monocular *Najib J Majaj, Chris Tailby, J Anthony Movshon*
- 11:00 **197** Both simple and choice reaction times reveal suppressive center-surround interactions in motion perception *Duje Tadin, Kristin K. Grdinovac, Bjorn P. Hubert-Wallander, Randolph Blake*
- 11:15 **198** Interaction of the On and Off pathways in motion processing with motion-defined-form signals. *Mark Edwards*
- 11:30 **199** Contrast and assimilation in visual motion processing for perception and smooth pursuit eye movements *Miriam Spering, Karl R. Gegenfurtner*
- 11:45 **200** The effect of object speed and angle on the perceived rigidity of an optic flow field. *Constance Royden, Michael Holloway*
- 12:00 **201** Disambiguation of optic flow with vestibular signals *Paul MacNeilage, John Butler, Heinrich Buelthoff, Martin Banks*

**TALK SESSION**

Saturday, May 12, 10:30 am - 12:15 pm,  
Hyatt Ballroom North

**The Many Functions of the Ventral Stream**

Moderator: David Sheinberg

- 10:30 **202** Neural Dynamics of Visual Scene Segmentation *Lawrence Appelbaum, Vladimir Vildavski, Mark Pettet, Alex Wade, Anthony Norcia*
- 10:45 **203** Object recognition in ventral temporal cortex is category-graded rather than specific: Neuropsychological evidence *Marlene Behrmann, Stephanie Manchin*
- 11:00 **204** Cortical fMRI maps in response to 3D morphs between head and house. *Roger B. H. Tootell, Kathryn J. Devaney, Gheorghe M. Postelnicu, Leslie G. Ungerleider*
- 11:15 **205** Joint object and motion selectivity in the temporal cortex *Jedediah Singer, David Sheinberg*

- 11:30 **206** Decoding of ITC Cell Activity Closely Predicts Human Visual Similarity Judgments *Ethan Meyers, Chou Hung, David Freedman, Earl Miller, Gabriel Kreiman*
- 11:45 **207** Retinotopy versus category specificity throughout primate cerebral cortex *Reza Rajimehr, Wim Vanduffel, Roger Tootell*
- 12:00 **208** Increased Structural Connectivity in Grapheme-Color Synesthesia *Romke Rouw, Steven Scholte*

**TALK SESSION**

Saturday, May 12, 2:00 - 3:30 pm,  
Hyatt Ballroom South

**Perception and Action I**

Moderator: Barbara Gillam

- 2:00 **209** Visual selection of multiple goal positions before rapid hand movement sequences *Daniel Baldauf, Heiner Deubel*
- 2:15 **210** Perceiving Changing Affordances for Action: Pregnant Women Walking Through Doorways *John Franchak, Karen Adolph*
- 2:30 **211** Steering performance is influenced by road width, road curvature and gaze behaviour. *Richard Wilkie, Katherine Robertshaw, John Wann*
- 2:45 **212** Human and Robot Ball Catching on a Hill: Is the Control Geometry on the Level or Atilt? *Michael K. McBeath, Thomas G. Sugar, Abhay Paranjape, Igor Dolgov, Wei Wang*
- 3:00 **213** The role of binocular vision in navigating obstacles *Kelly Chajka, Elia Vecellio, Mary Hayhoe, Barbara Gillam*
- 3:15 **214** Using a Bayesian Model to measure the benefit of visual landmarks and layout topology on human navigation efficiencies *Brian J. Stankiewicz, Jane Pitts*

**TALK SESSION**

Saturday, May 12, 2:00 - 3:30 pm,  
Hyatt Ballroom North

**Perceptual Organization: Contours I**

Moderator: Manish Singh

- 2:00 **215** Non-Bayesian Mechanisms of Contour Synthesis *Barton L Anderson, John Cass, Judit O'Vari*
- 2:15 **216** Local determinants of contour interpolation *Marianne Maertens, Robert Shapley*
- 2:30 **217** Breakdown of contour interpolation: Testing a multiple-contours hypothesis *Jacqueline M Fulvio, Manish Singh, Laurence T Maloney*
- 2:45 **218** Illusory Contour Formation Modulates Competitive Interactions in Human Extrastriate Cortex *Stephanie McMains, Sabine Kastner*
- 3:00 **219** Ladder contours are undetectable in the periphery *Keith May, Robert Hess*
- 3:15 **220** Evidence for synchrony using direct electrical stimulation of the human retina *Alan Horsager, Ione Fine*

**TALK SESSION**

Saturday, May 12, 4:00 - 5:45 pm,  
Hyatt Ballroom South

**Face Perception**

Moderator: Pawan Sinha

- 4:00 **221** Information distribution for face identification and its relation to human strategies *Matthew Peterson, Craig Abbey, Miguel Eckstein*
- 4:15 **222** What's lost in prosopagnosia? An investigation of familiar face processing in a single-case of pure prosopagnosia working in a kindergarten *Meike Ramon, Bruno Rossion*
- 4:30 **223** The spatio-temporal correlates of holistic face perception *Christine Schiltz, Corentin Jacques, Bruno Rossion*
- 4:45 **224** Spatial Limits of Face Processing: Evidence from Face Aftereffects. *Seyed-Reza Afraz, Patrick Cavanagh*
- 5:00 **225** Face Space: Distinctiveness, Discrimination and Dippers *Steven Dakin, Diana Omigie*
- 5:15 **226** Using computer vision to probe the neural correlates of categorical face perception *Ming Meng, Tharian Cherian, Susan Gabrieli, John Gabrieli, Pawan Sinha*
- 5:30 **227** Apparent Motion of the Face *Songjoo Oh, Maggie Shiffrar*

**TALK SESSION**

Saturday, May 12, 4:00 - 5:45 pm,  
Hyatt Ballroom North

**Attention: Objects, Scenes, and Search**

Moderator: Todd Horowitz

- 4:00 **228** Grouping determines object-based selection in human inferior intra-parietal sulcus *Yaoda Xu, Marvin Chun*
- 4:15 **229** The Representation of Ensemble Visual Features Outside the Focus of Attention *George Alvarez, Aude Oliva*
- 4:30 **230** Category Selectivity in the Ventral Visual Pathway Confers Robustness to Clutter and Diverted Attention. *Leila Reddy, Nancy Kanwisher*
- 4:45 **231** Dissociating task performance from neural repetition effects in ventral visual cortex *Nicholas B. Turk-Browne, Yaoda Xu, Marvin M. Chun*
- 5:00 **232** Discovering the Target Bias Map: Learning which features guide visual search in natural scenes *Dirk Walther, Mazyar Fallah, John K. Tsotsos*
- 5:15 **233** Getting Guidance Going *Evan M. Palmer, Michael J. Van Wert, Todd S. Horowitz, Jeremy M. Wolfe*
- 5:30 **234** Investigation of spontaneous saccades based on the saliency model in monkeys with unilateral lesion of primary visual cortex *Laurent Itti, Masatoshi Yoshida, David Berg, Takuro Ikeda, Rikako Kato, Kana Takaura, Tadashi Isa*

**Poster Sessions, Saturday, May 12****POSTER SESSION B**

Saturday, May 12, 8:30 am - 1:00 pm,  
Municipal Auditorium

**Eye Movements: Saccades and Smooth Pursuit**

Author Presents: 10:30 am - 12:15 pm

- B1 **235** Sensory and motor contributions to smooth pursuit variability *Karl R. Gegenfurtner, Christoph Rasche*
- B2 **236** Frames Of Reference For Eye-head Gaze Shifts Evoked During Stimulation Of The Primate Frontal Eye Fields *J.A. Monteon, J.C. Martinez-Trujillo, Hongying Wang, J.D. Crawford*
- B3 **237** Psychophysical and oculomotor reference points for visual direction measured with the Adaptive Optics Scanning Laser Ophthalmoscope. *Scott Stevenson, Girish Kumar, Austin Roorda*
- B4 **238** The effect of distractors in prosaccade, antisaccade, and memory-guided saccade tasks *Stefan Van der Stigchel, Wieske van Zoest, Jason J. S. Barton*
- B5 **239** Within-hemifield mutual interference and repulsion in the programming of antisaccades *Elizabeth Roy, Ipek Oruc, Jason Barton*
- B6 **240** A sequential sampling model of saccadic double-steps in direction *Casimir Ludwig, Iain Gilchrist*
- B7 **241** Prior probability effects and their inter-hemispheric interactions in human prosaccades and antisaccades *Saqib Ali Gowani, Jason Barton, Micheal Levin, Christopher Fox*
- B8 **242** Corrective saccades drive saccadic adaptation independently of explicit interpretation of retinal error *Junghyun Park, Shinsuke Shimojo*
- B9 **243** Suppression of steady state smooth pursuit by irrelevant flashes *Dirk Kerzel, Blandine Ulmann*

**Locomotion I: General**

Author Presents: 8:30 - 10:15 am

- B10 **244** Locomotor interception of unpredictable moving targets *Gabriel Diaz, Flip Phillips, Brett Fajen*
- B11 **245** Evaluating Alternative Metaphors for Augmented Locomotion through Large Scale Immersive Virtual Environments *Victoria Interrante, Brian Ries, Eleanor O'Rourke, Leanne Gray, Jason Lindquist, Lee Anderson*
- B12 **246** Catching fly balls in VR: A test of the OAC, LOT and trajectory prediction strategies *Boris Khomut, William Warren*
- B13 **247** Visual odometry by leaky integration *Markus Lappe, Michael Jenkin, Laurence Harris*
- B14 **248** Effect of UFOV Impairment on Kinematics of Curve Driving *Monica Severson, Ergun Y. Uc, MD, JonDavid Sparks, BA, Matthew Rizzo, MD*
- B15 **249** Visual control of locomotor steering: An fMRI study *John Wann, David Field, Richard Wilkie*
- B16 **250** Simulated visual impairment affects night-time driving and pedestrian recognition *Joanne Wood, Alex Chaparro, Trent Carberry, Byoung Sun Chu*

B17 **251** A Reinforcement Learning Model of Visually Guided Braking *Chris R. Sims, Brett R. Fajen*

B18 **252** Optic flow serves as a teaching signal for visual-locomotor adaptation *William Warren, Hugo Bruggeman, Wendy Zosh*

B19 **253** The influence of locomotion on the axis-aligned motion bias in large situated display environments. *Igor Dolgov, Christopher Todd, David Birchfield, Michael McBeath, Harvey Thornburg*

B20 **254** Recalibration of the relationship between visual and action space: Evidence for generalization across actions *Colin El-lard, Lori Wagar, Meghan Eller*

### Visuomotor Control: Hand Movements

Author Presents: 8:30 - 10:15 am

B21 **255** Visually guided pointing and the Müller-Lyer illusion: why are the data so contradictory? *Nicola Bruno, Paolo Bernardis*

B22 **256** Execution generated illusory motor bias: two systems, one representation *Gord Binsted, Crystal Ehresman, Matthew Heath, Deb Saucier*

B23 **257** Grasping after a delay: More ventral than dorsal? *Volker H. Franz, Constanze Hesse, Susanne Kollath*

B24 **258** Evidence for the Use of a Binocular Tau-dot Strategy in Visually Guided Reaching *Joe Anderson, Geoffrey Bingham*

B25 **259** A Binocular Tau-dot Model for Guiding Reaches *Geoffrey Bingham, Joe Anderson*

B26 **260** Planning movements well in advance *Constanze Hesse, Denise D.J. de Grave, Volker H. Franz, Eli Brenner, Jeroen B.J. Smeets*

B27 **261** Vision predominates sensorimotor transformations for online grasping control *Matthew Heath, Luc Tremblay, Gord Binsted*

B28 **262** Gauging Affordances for Reaching through Apertures *Shaziela Ishak, Karen Adolph*

B29 **263** Do binocular depth cues have a special role in grasping? *Simon Watt, Bruce Keefe, Paul Hibbard*

B30 **264** Independent gaze-centered representations of reach targets viewed with left vs. right eye *Aarlenne Khan, Gunnar Blohm, Lei Ren, J Douglas Crawford*

B31 **265** Visual control of hand position and orientation during one-handed catching *Brett Fajen, Christopher Cramer*

B32 **266** Reaching to a Point or Reaching over a Distance - What is the Difference? *Lore Thaler, James Todd*

B33 **267** Performance in rapid, sequential visually-guided pointing movements *Shih-Wei Wu, Maria F DalMartello, Laurence T Maloney*

B34 **268** Learning in image-guided reaching changes the representation-to-action mapping *Bing Wu, Roberta Klatzky, Damion Shelton, George Stetten*

B35 **269** Constraint induced learning in a visually guided motor task *Uta Wolfe, James Gray, Laurence Maloney*

B36 **270** Human pointing movements in a probabilistic environment *Anna Seydell, Brian McCann, Julia Trommershäuser, David Knill*

B37 **271** The covariance structure of speeded reaching movements *Todd E Hudson, Uta Wolfe, Laurence T Maloney*

### Attention: Neural Mechanisms

Author Presents: 8:30 - 10:15 am

B38 **272** Attentional modulation of the BOLD-fMRI contrast response functions in early visual areas *Xiangrui Li, Zhong-Lin Lu, Bosco S. Tjan, Barbara A. Doshier, Wilson Chu*

B39 **273** Perceptual load-induced selection as a result of neural competition in early visual cortex *Ana Torralbo, Diane Beck, Arthur Kramer*

B40 **274** The influence of a visual task on fMRI activation patterns in the visual cortex *Joongnam Yang, Dan Ts'o*

B41 **275** Spatial Distribution of Attention Effects in Human Visual Cortex *Jason C. Park, Xian Zhang, John Ferrera, Donald C. Hood, Joy Hirsch*

B42 **276** Feature-based attention increases gain and sharpens tuning of motion selective channels *Sam Ling, Taosheng Liu, Marisa Carrasco*

B43 **277** Perceptual decisionmaking in human visual cortex *John Serences, Geoffrey Boynton*

B44 **278** Behavioral measures of cross-modal attention are consistent with fMRI responses in V1 and not MT+. *Vivian Ciaramitaro, Geoffrey Boynton*

B45 **279** Activity in monkey V4 reflects target identification and saccade direction in free viewing visual search *Angela Gee, Anna Ipata, Michael Goldberg*

B46 **280** Gamma band levels index voluntary shifts of attention to faces *Ayelet Landau, Michael Esterman, Lynn Robertson, William Prinzmetal*

B47 **281** Attenuating illusory binding with TMS of the right parietal cortex *Michael Esterman, Timothy Verstynen, Lynn Robertson*

B48 **282** Dissociating the cognitive mechanisms of sustained attention and response inhibition: An fMRI study using a conjunctive go/no-go task *Lilach Shalev, Carmel Mevorach, Harriet Allen, Glyn Humphreys*

B49 **283** The Left Inferior Parietal Lobe Modulates the Selection of Low Salient Stimuli *Carmel Mevorach, Lilach Shalev, Harriet Allen, Glyn Humphreys*

B50 **284** Temporal Dynamics of an Attentional Switch *Sarah Shomstein, Dwight Kravitz, Marlene Behrmann*

B51 **285** Abstract withdrawn

B52 **286** The role of spatial and selective attention in the perception of bistable images. *Michael Pitts, Jan Nerger, Clea Stalmaster*

B53 **287** ERP 'blink' instructions revisited: Effects on attention-related processes *Julie Bolduc-Teasdale, Michelle Beaupré, Nicolas Robitaille, Michelle McKerral*

B54 **288** Adaptation and habituation of visual responses in the superficial and intermediate layers of the superior colliculus (SC) *Susan Boehnke, David Berg, Pierre Baldi, Laurent Itti, Doug Munoz*

B55 **289** A neural network model of simultaneous visual discrimination: Incentive modulation of visual stimulus salience. *Mark Dranias, Daniel Bullock, Stephen Grossberg*

## Scene Perception I

Author Presents: 10:30 am - 12:15 pm

B56 **290** Boundary Extension in the Transsaccadic Representation of Layout *Christopher Dickinson, Helene Intraub*

B57 **291** Conceptual Masking: Is it really all about the concept or does layout matter? *Kristin O. Michod, Helene Intraub*

B58 **292** Memory for Viewpoint Changes in Naturalistic Scenes *Monica S. Castelhana, Alexander Pollatsek, Keith Rayner*

B59 **293** Object and scene recognition in tiny images *Antonio Torralba, Rob Fergus, William T. Freeman*

B60 **294** Integrating Central and Peripheral Information During Object Categorization *Kimberly MacKenzie, Yaihara Fortis-Santiago, Jozsef Fiser*

B61 **295** Functional Representations of Layout Are Disrupted by Irrelevant Objects *Thomas Sanocki, Noah Sulman*

B62 **296** Color information impairs change detection *Maarten J. van der Smagt, Tanja C. W. Nijboer*

B63 **297** Differential Perceived Speeds Explain The Apparent Compression In Slit Viewing *Haluk Ogmen, Murat Aydin, Michael Herzog*

B64 **298** Aspects of painting perception *Slobodan Markovic, Ana Radonjic*

B65 **299** A Test of the Consistency of Scene Preferences across Cultures *Xiaomin Yue, Mark Lescroart, Edward Vessel, Irving Biederman*

B66 **300** The Elevation of Visually Perceived Eye Level (VPEL) Is An Oscillatory Function of Visual Pitch *Wenxun Li, Leonard Matin*

B67 **301** Solider direction and soldier location: Image fusion and compression in two scene perception tasks *Timothy Dixon, Eduardo Canga, Stavri Nikolov, Tom Troscianko, Jan Noyes, Dave Bull, Nishan Canagarajah*

## 2D Shape and Form

Author Presents: 10:30 am - 12:15 pm

B68 **302** Seeing shape in noise: tuning characteristics of global shape mechanisms *Gunter Loffler, David M. Bennett, Gael E. Gordon*

B69 **303** New local and global shape illusions due to grouping *Baingio Pinna*

B70 **304** Prolonged exposure to global structure induces 'remote' tilt-aftereffects *Neil Roach, Ben Webb, Paul McGraw*

B71 **305** The role of 2D and 3D symmetry information in face processing in the human brain *Christopher Tyler, Cathy Kao, CC Chen*

B72 **306** Perceiving Planar Symmetric Objects in 3D Scenes *Tadamasa Sawada, Zygmunt Pizlo*

B73 **307** Symmetry and relational structure in the perception of rectangular frames *Stefano Guidi, Stephen E. Palmer*

B74 **308** Masking exposes multiple global form mechanisms at intermediate levels of visual processing *Ben S. Webb, Neil W. Roach, Jon W. Peirce*

B75 **309** Hysteresis between shape-defined categories *Frances Wilkinson, Seema Shahjahan, Hugh Wilson*

B76 **310** Frequency-based categorization of complex visual objects *Johannes Haushofer, Chris I. Baker, Nancy Kanwisher*

B77 **311** When change blindness fails: Factors determining change detection for circular patterns *Christian Kempgens, Gunter Loffler, Harry S. Orbach*

B78 **312** Dimensional consistency effects with illusory dimensions *Jennifer Bittner, Michael Wenger, Brianna Sullivan, Rebecca Von Der Heide*

B79 **313** Compression In Slit Viewing Occurs Not In Space But At Object Level *Murat Aydin, Michael Herzog, Haluk Ogmen*

## Special Populations: Development

Author Presents: 10:30 am - 12:15 pm

B80 **314** Developmental changes in the capacity to process faces *Rebecca Von Der Heide, Michael Wenger, Rick Gilmore, Matthew Walsh, Brianna Sullivan, Jennifer Bittner*

B81 **315** The Development of Abstract Numerical Processing in Parietal Cortex *Jessica Cantlon, Melissa Libertus, Elizabeth Brannon, Kevin Pelphrey*

B82 **316** Six-year-old children do not integrate visual-haptic information optimally *Monica Gori, Maria Michela Del Viva, Giulio Sandini, David Burr*

B83 **317** Infants' Visual Habituation Patterns Show Large Within-Session Variability *Rick Gilmore, Laura Murray-Kolb, Jung Min Lee*

B84 **318** Good-poor reader accuracy differences in four-dot masking *Richard Kruk*

B85 **319** Representational Momentum in Preterm and Full-term Children *Nicole Taylor, Lorna Jakobson*

B86 **320** Infants' ability to enumerate multiple spatially-overlapping sets in parallel *Jennifer Zosh, Lisa Feigenson, Justin Halberda*

B87 **321** Spatial lateral interactions during childhood *David Boutin, Dave Ellemberg*

B88 **322** The impact of maturation and aging on mechanisms of attentional selection *Ran Carmi, Po-He Tseng, Ian Cameron, Laurent Itti, Doug Munoz*



**POSTER SESSION C**

Saturday, May 12, 2:00 - 6:30 pm,  
Municipal Auditorium

**V1 and Thalamus: Anatomy and Organization**

Author Presents: 4:00 - 5:45 pm

- C1 **323** Precise topographic encoding of visual stimuli in the human pulvinar *Jason Fischer, David Whitney*
- C2 **324** The connectivity of the human pulvinar: a diffusion tensor imaging tractography study *Sandra E. Leh, M. Mallar Chakravarty, Alain Ptito*
- C3 **325** Representation of the ipsilateral visual field in early retinotopic cortex *Petya D Radoeva, Geoffrey K Aguirre*
- C4 **326** The human occipital lobe: variability and probability maps of the sulci. *Giuseppe Iaria, Steve Robbins, Michael Petrides*
- C5 **327** What makes topographic map boundaries parsimonious? *Kathleen Hansen*
- C6 **328** Abstract withdrawn
- C7 **329** The effects of a cholinergic deficit on visual learning in rats *Alexandre Ben Amor, Elvire Vaucher*
- C8 **330** The mechanism underlying large-scale reorganization in human macular degeneration patients *Yoichiro Masuda, Satoshi Nakadomari, Serge O. Dumoulin, Sing-Hang Cheung, Ayumu Furuta, Kenji Kitahara, Brian A. Wandell*
- C9 **331** Changes in Inhibitory Mechanisms in Human Visual Cortex Throughout the Lifespan *Joshua G. A. Pinto, Kyle R. Hornby, David G. Jones, Kathryn M. Murphy*
- C10 **332** Pattern-Pulse Multifocal MEG Mapping of Human Visual Cortex using the General Linear Model *Andrew James, Xin-Lin Goh, Simo Vanni*
- C11 **333** Designer Stimuli Enables VEP Based Separation of Early Visual Areas *Timothy Erlenmeyer, Justin Ales, Thom Carney, Stanley Klein*

**Brightness, Lightness and Luminance**

Author Presents: 2:00 - 3:45 pm

- C12 **334** Parametric measurements of lightness in the context of real illuminated objects *Sarah R. Allred, David H. Brainard*
- C13 **335** Amodal completion affects lightness perception *Huseyin Boyaci, Fang Fang, Scott O. Murray, Daniel Kersten*
- C14 **336** The Hermann grid is an equiluminant weave *Kai Hamburger, Arthur G. Shapiro*
- C15 **337** A filtering model of brightness perception using Frequency-specific Locally-normalized Oriented Difference-of-Gaussians (FLODOG) *Alan E. Robinson, Paul S. Hammon, Virginia R. de Sa*
- C16 **338** Multiplicative Model for Spatial Interaction in the Human Visual Cortex *Xian Zhang, Jason C. Park, Jennifer Salant, Sonya Thomas, Joy Hirsch, Donald C. Hood*
- C17 **339** The transition luminance between the surface-color and the illuminant-color modes may reveal the illuminant represented in the visual system *Takayuki Fukuya, Keiji Uchikawa*

- C18 **340** A sub-cortical locus for brightness filling in *Elaine Anderson, Steven Dakin, Geraint Rees*
- C19 **341** Correlation of fMRI responses to absolute luminance changes in visual cortex *Hiroshi Horiguchi, Satoshi Nakadomari, Ayumu Furuta, Kunihiko Asakawa, Yoichiro Masuda, Kenji Kitahara, Takeshi Abe, Shigeyuki Kan, Masaya Misaki, Satoru Miyauchi*
- C20 **342** fMRI responses in V1 represent the perceived rather than physical stimulus contrast *Kathryn Murray, Geoffrey Boynton*
- C21 **343** Brightness Induction in Human V3 *Maria Pereverzeva, Scott Murray*
- C22 **344** Target luminance modulates saccadic behavior and visual sensory responses in the superior colliculus *Robert Marino, Ron Levy, Doug Munoz*
- C23 **345** Rapid search for gross illumination discrepancies in upright but not inverted images. *P. George Lovell, David Tolhurst, Michelle To, Tom Troscianko*
- C24 **346** The accuracy of observers' estimates of their ability to see and steer in low luminances *Johnell O. Brooks, Richard A. Tyrrell, Benjamin R. Stephens*
- C25 **347** Preferred Driving Speeds of Older and Younger Drivers under Varying Luminance Conditions *Ashley A. Martin, Brooke C. Manger, Nathan D. Klein, Peggy J. Tyler, Johnell O. Brooks*
- C26 **348** The effects of fog on driving speed *Yarbough N. Miller, Anna L. Hilpert, Nathan D. Klein, Peggy J. Tyler, Johnell O. Brooks*

**Spatial Vision: Contrast and Masking**

Author Presents: 4:00 - 5:45 pm

- C27 **349** Anisotropic contrast gain inferred from broadband masking *Andrew M. Haun, Edward A. Essock*
- C28 **350** Collinear facilitation: effects of additive and multiplicative visual noise *Pi-Chun Huang, Robert F. Hess*
- C29 **351** An absence of orientation selectivity for visual masking *Stanley Govenlock, Patrick Bennett, Allison Sekuler*
- C30 **352** The effects of collinearity on contrast discrimination tasks. *Michael Kramer, Lynn Olzak*
- C31 **353** Cross-orientation interactions in second-order mechanisms *Lynn Olzak, Michael Kramer*
- C32 **354** Analysing spatiotemporal dynamics in contrast detection by Classification Images *Ilmari Kurki, Aapo Hyvärinen, Jussi Saarinen*
- C33 **355** A technique for measuring single-item identification efficiencies *Jason Gold, Brianna Conrey, Ami Eidels*
- C34 **356** A new subtractive normalization model for contrast processing of visual stimuli *Velitchko Manahilov, Gael Gordon, Julie Calvert, William Simpson*
- C35 **357** Cross-orientation masking in the red-green isoluminant and luminance systems *Jose Medina, Tim Meese, Kathy Mullen*
- C36 **358** Temporal characteristics and surround modulation of contrast masking *Toni Saarela, Michael Herzog*
- C37 **359** The effect of glare on visibility depends on spatial frequency *Rolando Aguirre, Jose Barraza, Elisa Colombo*

C38 **360** Lateral masking with contrast- and luminance-modulated patterns *Chien-Chung Chen*

C39 **361** The human contrast response function: overcoming experimental pitfalls. *Mikhail Katkov, Misha Tsodyks, Dov Sagi*

C40 **362** Effect of signal strength on attentional blink *Sung Jun Joo, Sang Chul Chong*

### Adaptation and Aftereffects

Author Presents: 2:00 - 3:45 pm

C41 **363** Adaptation and Afterimages: A model of inverse multiplicative sensitivity adjustment. *Thaddeus B. Czuba, R. Dirk Beer, Donald I. A. MacLeod*

C42 **364** More about "Buffy adaptation" *S. Sabina Wolfson, Norma Graham*

C43 **365** The effect of contrast on adaptation to compound patterns *David McGovern, Jonathan Peirce*

C44 **366** Frame-contingent density aftereffects: A closer look *Kristina Simmons, Frank Durgin*

C45 **367** Adaptation and contrast constancy in natural images *Kyle McDermott, Saloni Sharma, Michael Webster*

C46 **368** Perceptual Adaptation to Environmental Scale *Christine Ziemer, Jodie Plumert, James Cremer, Joseph Kearney*

C47 **369** Blur adaptation and induction in the fovea and periphery *Sara Haber, Nicole Ballardini, Michael Webster*

C48 **370** Exploring the dynamics of light adaptation by measuring sensitivity against a flickering background *Peter Smith, Leon McLin, Laura Barnes, Bret Rogers*

C49 **371** Two timescales of orientation-contingent color adaptation. *Erin Krizay, Edward Vul, Erin Shubel, Donald I A MacLeod*

C50 **372** Spatial properties of curvature encoding revealed by the shape-frequency and shape-amplitude after-effects. *Elena Gheorghiu, Frederick A. A. Kingdom*

C51 **373** Adaptation to circular patterns influences the perception of distorted squares *Isabelle Legault, Remy Allard, Jocelyn Faubert*

C52 **374** A Rotational Aftereffect Induced By Context *Alexander Zotov, Jon Grossmann, Allan Dobbins*

C53 **375** TMS "instant replay" validated using novel double-blind stimulation technique *Daw-An Wu, Neil Halelamien, Fumiko Hoeft, Shinsuke Shimojo*

C54 **376** TMS induces detail-rich "instant replays" of natural images *Neil Halelamien, Daw-An Wu, Shinsuke Shimojo*

C55 **377** Cortical dynamics of negative afterimages: Spatial properties of the inducer *Joshua Wede, Gregory Francis*

C56 **378** Switch color afterimages suggest cortical mechanisms *Daniel R. VanHorn, Gregory Francis*

C57 **379** Neural correlates of perceptual filling-in of an artificial scotoma in humans *Rimona Weil, James Kilner, John-Dylan Haynes, Geraint Rees*

C58 **380** Attentional load modulates time-to filling-in of an artificial scotoma. *Victoria Wykes, Rimona Weil, Geraint Rees*

C59 **381** The effect of sensorimotor adaptation on chromatic judgments. *David Richters, Rhea Eskew*

### 3D Perception: Space

Author Presents: 2:00 - 3:45 pm

C60 **382** On judging surface slant using haptic (palm-board) and verbal-report tasks *Zijiang J He, Ji Hong, Teng Leng Ooi*

C61 **383** Accurate perception of visual space from live-video in a head-mounted display *Mikio Akagi, Frank Durgin*

C62 **384** Visual search on the ground-like surface defined by texture gradients in chimpanzees (*Pan troglodytes*) and humans (*Homo sapiens*). *Tomoko Imura, Masaki Tomonaga*

C63 **385** How much can vision tell us about where we are? Measuring the channel capacity between visual perception and spatial layout *Sahar Nadeem, Brian Stankiewicz*

C64 **386** The position of objects relative to the horizon affects size-distance invariance *Kerem Ozkan, Myron Braunstein*

C65 **387** Arousal Influences the Perception of Height *Jeanine Stefanucci, Justin Storbeck*

C66 **388** Exocentric Pointing in Depth *Andrea van Doorn, Jan Koenderink, Astrid Kappers, Michelle Doumen, James Todd*

C67 **389** Homonymous hemianopia alters distribution of visual fixations in 3-dimensional virtual environments *Meghan Riley, Kristin Kelly, Tim Martin, Mary Hayhoe, Krystel Huxlin*

C68 **390** Depth perception of real objects and virtual objects when they are presented at the same depth defined by binocular retinal disparity *Masahiro Suzuki, Kazutake Uehira*

C69 **391** Golf performance makes the hole look as big as a bucket or as small as a dime *Jessica Witt, Sally Linkenauger, Jon Bakdash, Dennis Proffitt*

### Visual Control of Movement: Neural Mechanisms

Author Presents: 2:00 - 3:45 pm

C70 **392** A comparison of saccade and pointing topography between medial and lateral areas in the human posterior parietal cortex *John Zettel, Tutis Vilis, Jody Culham, Doug Crawford*

C71 **393** TMS over posterior parietal cortex disrupts the integration of initial hand position information into the reach plan *Michael Vesia, Denise Henriques, Xiaogang Yan, Lauren Sergio, JD Crawford*

C72 **394** Inferior parietal recordings and behavioral effects of shifting prisms on visually guided reaching. *Anushree Karnik, Barbara Heider, Ralph M. Siegel*

C73 **395** Foveal and peripheral reaching activity in the macaque cortical area V6A *Patrizia Fattori, Rossella Breveglieri, Nicoletta Marzocchi, Daniela Filippini, Claudio Galletti*

C74 **396** Target selection for visually-guided reaching in macaque *Joo-Hyun Song, Robert McPeck, Naomi Takahashi*

C75 **397** Selectivity of human mirror system responses during observation and execution of congruent versus incongruent hand actions *Trevor Chong, Ross Cunnington, Mark A. Williams, Jason B. Mattingley*

C76 **398** Spatial deficits in visuomotor control along the body midline in a patient with optic ataxia. *Carol Broderick, Danielle Striemer, Shayna Sparling, Keelan Murtha, Julie Corbett, Dwight Stewart, James Danckert*

## Multisensory Processing

Author Presents: 4:00 - 5:45 pm

C77 **399** Attention enhances visual contributions to multisensory integration for the perception of upright. *Jennifer E. Corbett, Marisa Carrasco*

C78 **400** A (nother) new way to measure up: the oblique derived subjective visual vertical *Richard Dyde, Laurence Harris*

C79 **401** Human fMRI of tactile spatial representations *Flavia Filimon, Jonathan Nelson, Martin Sereno*

C80 **402** Equivalent stream/bounce effects in cyclopean and luminance defined displays *Philip Grove, Kenzo Sakurai*

C81 **403** The relative contributions of the visual components of a natural scene in defining the perceptual upright. *Laurence Harris, Richard Dyde, Michael Jenkin*

C82 **404** Meaningful association of a sound with a target facilitates visual search. *Lucica Iordanescu, Marcia Grabowecky, Satoru Suzuki*

C83 **405** Visual perceptual learning enhanced with congruent sound *Robyn Kim, Aaron Seitz, Ladan Shams*

C84 **406** Musical Use of Visual Gestures: the importance of contextual information in sensory integration *Michael Schutz, Michael Kubovy*

C85 **407** Integration of multi-sensory directional information during goal-directed pointing *Sascha Serwe, Knut Drewing, Julia Trommershäuser*

C86 **408** Superior Visual Detection Capabilities in Congenitally Deaf Cats *Lomber Stephen, Kral Andrej*

C87 **409** Light priors, learning and feedback *Erich W. Graf, Wendy J. Adams, Samira Bouzit*

C88 **428** Auditory stimuli elicit spatially specific responses in visual cortex *Santani Teng, David Whitney*

## Talk Sessions, Sunday, May 13

### TALK SESSION

Sunday, May 13, 8:30 - 10:00 am,  
Hyatt Ballroom South

### Grouping and Segmentation I

Moderator: Ruth Rosenholtz

8:30 **410** Persistence of the neural border ownership signal indicates short-term memory in perceptual organization *Philip O'Herron, Rudiger von der Heydt*

8:45 **411** Attention and figure-ground status produce separate steady-state VEP effects in human cortex *Joseph Brooks, Stephen Palmer*

9:00 **412** Cortical network dynamics of figure/ground categorization *Lora T. Likova, Christopher W. Tyler*

9:15 **413** Filtering in feature space: a computational model of grouping by proximity and similarity *Ruth Rosenholtz, Nathaniel Twarog, Martin Wattenberg*

9:30 **414** Second-order perceptual grouping *Timothy J. Vickery, Yuhong V. Jiang*

9:45 **415** Learning static Gestalt laws through dynamic experience *Yuri Ostrovsky, Jonas Wulff, Pawan Sinha*

### TALK SESSION

Sunday, May 13, 8:30 - 10:00 am,  
Hyatt Ballroom North

### Eye Movements: Mechanisms

Moderator: Scott Stevenson

8:30 **416** Superior colliculus (SC) neural activity codes visually guided head-unrestrained gaze movements in retinal coordinates. *Joseph DeSouza, Gunnar Blohm, Xiaogang Yan, Hongying Wang, J. Doug Crawford*

8:45 **417** Effects of visual salience on superior colliculus neural activity during visual conjunction search. *Kelly Shen, Martin Paré*

9:00 **418** fMRI BOLD signal reveals neural correlates of microsaccades *Peter Tse, Florian Baumgartner, Mark Greenlee*

9:15 **419** Dynamic receptive field effects predicted by a saccade target theory of visual perception *Fred H Hamker, Marc Zirnsak, Markus Lappe*

9:30 **420** Spontaneous oculomotor oscillations induced by delayed visual feedback *Jeffrey B. Mulligan, Scott B. Stevenson*

9:45 **421** Competition between exogenous and endogenous signals revealed by saccade latency and saccade curvature in the monkey *Brian White, Susan Boehmke, Robert Marino, Durk Talsma, Laurent Itti, Jan Theeuwes, Douglas Munoz*

### TALK SESSION

Sunday, May 13, 10:30 am - 12:15 pm,  
Hyatt Ballroom South

### Early Visual Processing: Receptive Fields

Moderator: A.B. Bonds

10:30 **422** Lateral Interactions in Outer Retina Disclosed by High Resolution Dynamic Optical Imaging of Neural Activation *John George, Xin-cheng Yao*

10:45 **423** Neural decoding reveals the orientation-selective properties of early human visual area *Stephenie Harrison, Yukiyasu Kamitani, John Dewey, Frank Tong*

11:00 **424** Responses of Striate Cortex Neurons to Transient Changes in Local Contrast and Luminance *Wilson Geisler, Duane Albrecht, Alison Crane*

11:15 **425** Is Synchrony a reasonable coding strategy for visual areas beyond V1 in primates? *Walter Jermakowicz, Xin Chen, Ilya Khaytin, Chris Madison, Zhiyi Zhou, Melanie Bernard, AB Bonds, Vivien Casagrande*

11:30 **426** Heterogeneity in the Responses of Adjacent Neurons to Natural Stimuli in Cat Striate Cortex *Shih-Cheng Yen, Jonathan Baker, Charles Gray*

11:45 **427** Neural dynamics of surface processing in V1 *Arash Yazdanbakhsh, Margaret Livingstone*

12:00 **174** Response to motion and motion boundaries in monkey V2 *Haidong Lu, Anna Roe*

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### TALK SESSION

Sunday, May 13, 10:30 am - 12:15 pm,  
Hyatt Ballroom North

### Object Recognition

Moderator: Sabine Kastner

10:30 **429** Functionally and anatomically distinct regions for processing form and texture in the human ventral stream revealed by fMR-adaptation *Jonathan S. Cant, Stephen R. Arnott, Melvyn A. Goodale*

10:45 **430** Attention can relieve crowding *Jeremy Freeman, Denis Pelli*

11:00 **431** Finding Signals in Noise: The Neural Advantage of Prior Information *Scott Gorlin, Jitendra Sharma, Hiroki Sugihara, Mriganka Sur, Pawan Sinha*

11:15 **432** Object representations in the dorsal pathway: fMRI adaptation effects in topographically organized areas of the human posterior parietal cortex *Christina Konen, Sabine Kastner*

11:30 **433** Recognition memory is better for less-occluded than for identical images of natural scenes and faces *Zili Liu, Hongjing Lu*

11:45 **434** Breaking multiple forms of view invariance *Guy Wallis*

12:00 **435** Competition between domains of expertise in a visual search paradigm *N Rankin Williams, Thomas J McKeef, Frank Tong, Isabel Gauthier*

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### TALK SESSION

Sunday, May 13, 2:00 - 3:30 pm,  
Hyatt Ballroom South

### Attention Modulation of Sensory Signals: Physiology

Moderator: Robert McPeck

2:00 **436** Non-equivalence between attentional modulation and increases in signal contrast for superior colliculus neurons *Miguel Eckstein, Dorion Liston, Richard Krauzlis*

2:15 **437** Superior colliculus activity related to reflexive and top-down shifts of attention *Robert M. McPeck*

2:30 **438** The inhibitory surrounds of neurons in the lateral intraparietal area (LIP) of the monkey can be activated and modulated by top-down processes. *Annegret L. Falkner, B. Suresh Krishna, Michael E. Goldberg*

2:45 **439** Dynamic modulation of direction selectivity by task demands in prefrontal cortex *Cory Hussar, Tatiana Pasternak*

3:00 **440** Figure-Ground, Proto-Objects, and Selective Attention: Understanding the Neural Mechanisms *Rudiger von der Heydt, Fangtu T. Qiu*

3:15 **441** Inhibitory tagging in an interrupted visual search *Laura Thomas, Alejandro Lleras*

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### TALK SESSION

Sunday, May 13, 2:00 - 3:30 pm,  
Hyatt Ballroom North

### Spatial Vision I

Moderator: Steve Dakin

2:00 **442** Multiplication of 1st-stage inputs to curvature detectors *Frederick Kingdom, Elena Gheorghiu*

2:15 **443** Lines and dipoles are efficiently detected *Albert Ahumada, Lauren Scharff*

2:30 **444** Non-retinotopic crowding *Patrick Cavanagh, Alex O. Holcombe*

2:45 **445** Equivalent noise reveals that visual crowding is not an attentional effect *John Cass, Peter Bex, Roger Watt, Steven Dakin*

3:00 **446** Optimal feature integration across spatial-frequencies in central and peripheral vision *Anirvan Nandy, Bosco Tjan*

3:15 **447** Reading is crowded *Katharine Tillman, Denis Pelli, Jeremy Freeman, Michael Su, Tracey Berger, Najib Majaj*

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### TALK SESSION

Sunday, May 13, 4:00 - 5:45 pm,  
Hyatt Ballroom South

### Memory

Moderator: Barbara Doshier

4:00 **448** Dual effects of emotion on perception: Emotional distractors impair selection but enhance consolidation *Steven B. Most, Nicholas B. Turk-Browne, Justin A. Jungé*

4:15 **449** Saccadic planning controls the input to visual memory *Timothy Gersch, Eileen Kowler, Brian Schnitzer, Barbara Doshier*

4:30 **450** Determining parietal involvement in visual working memory: Causal or Incidental? *Marian Berryhill, Ingrid Olson*

4:45 **451** Are Visual Working Memory and Multiple Object Tracking Limited by A Common Attention Capacity? *Hang Zhang, Yuning Xuan, Xiaolan Fu*

5:00 **452** Visual Working Memory Represents a Fixed Number of Items Regardless of Complexity *Edward Awh, Brian Barton, Edward Vogel*

5:15 **453** The Binding of Objects to Locations in Visual Short-Term Memory *Andrew Hollingworth, Ian P. Rasmussen*

5:30 **454** Priming of Pop-out: An automatic process that is governed by volition. *Jillian Fecteau*

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### TALK SESSION

Sunday, May 13, 4:00 - 5:45 pm,  
Hyatt Ballroom North

### Spatial Vision II

Moderator: James Elder

4:00 **455** Entasis: architectural illusion compensation, aesthetic preference or engineering necessity? *Peter Thompson, Georgia Papadopoulou, Eleni Vassilou*

4:15 **456** Adaptation can increase sensitivity to visual features  
*Mick Falconbridge, Ladan Shams, Stephen Engel*

4:30 **457** Learning of unconscious scene-target spatial associations involves the sharpening of a distributed network of visual areas  
*Maximilien Chaumon, Valérie Drouet, Denis Schwartz, Catherine Tallon-Baudry*

4:45 **458** The Impact of Prolonged Contrast Reduction on Visual Contrast Coding  
*MiYoung Kwon, Fang Fang, Allen M.Y. Cheong, Gordon Legge, Sheng He*

5:00 **459** Classification image analysis of oriented texture detection  
*Charles C.-F. Or, James H. Elder*

5:15 **460** Measuring Visual Mechanism Sensitivity  
*Charles Chubb, Michael S. Landy*

5:30 **461** Feature Integration for Letter Identification is Just as Good in Peripheral as in Foveal Vision  
*Susana Chung*

## Poster Sessions, Sunday, May 13

### POSTER SESSION D

Sunday, May 13, 8:30 am - 1:00 pm,  
Municipal Auditorium

### Rivalry and Bi-Stability II

Author Presents: 8:30 - 10:15 am

D1 **462** Stabilizing bistable visual patterns through interocular suppression, crowding, and inattention  
*Sheng He, Yi Jiang, Xiangchuan Chen*

D2 **463** Establishing stable interocular suppression through repeated presentation of very brief stimuli  
*Xiangchuan Chen, Sheng He*

D3 **464** Monocular Depth Ordering Affect Perceptual Filling-In and Motion Induced Blindness  
*Li-Chuan Hsu, Peter Kramer, Su-Ling Yeh*

D4 **465** Representation of location during misbinding of color  
*Para Kang, Steven Shevell*

D5 **466** Misbinding of Color to Form in Afterimages  
*Rebecca St.Clair, Sang Wook Hong, Steven Shevell*

D6 **467** Temporal characteristics of priming effects on the perception of ambiguous patterns  
*Alexander Pastukhov, Jochen Braun*

D7 **468** Further differences between positive and negative priming in the perception of ambiguous patterns  
*Jochen Braun, Alexander Pastukhov*

D8 **469** Noise vs. adaptation: which is responsible for perceptual switches?  
*Asya Shpiro, Ruben Moreno-Bote, John Rinzel, Nava Rubin*

D9 **470** Do eyes or stimuli dominate perception during binocular rivalry? The answer is clear!  
*Derek Arnold, Philip Grove, Thomas Wallis*

D10 **471** Percept-dependent modulations of neuronal activity occur earlier for shape than for colour stimuli  
*Sandra Veser, Urte Roeber, Erich Schröger*

D11 **472** Distinct binocular interactions for pattern and color revealed by visibility modulation of rivalrous stimuli  
*Satoru Abe, Eiji Kimura, Ken Goryo*

D12 **473** Influence of emotional stimuli on the dynamics of binocular rivalry  
*Rachel Bannerman, Maarten Milders, Beatrice De Gelder, Arash Sahraie*

D13 **474** Onset rivalry: Brief presentation isolates an early independent phase of perceptual competition  
*Olivia Carter, Patrick Cavanagh*

D14 **475** Long-Lasting Connections: the Relationship between Motion-Induced Blindness and Binocular Rivalry Reconsidered  
*Dina Devyatko*

### Time Perception and Temporal Processing

Author Presents: 8:30 - 10:15 am

D15 **476** Contrast gain changes affect the perceived duration of visual stimuli.  
*Aurelio Bruno, Alan Johnston*

D16 **477** Perceived duration is shortened after motion direction changes  
*Joan Lopez-Moliner, Daniel Linares*

D17 **478** Temporal masking within and between chromatic and achromatic axes  
*David Alais, John Cass, Branka Spehar, Colin Clifford*

D18 **479** Moving Objects are Perceived Later  
*Pascal Mamassian, Andrei Gorea, Alan Johnston*

D19 **480** Effect of stimulus brightness on LRP latency and RT  
*Agnieszka Nowik, Piotr Jaekowski*

D20 **481** Peri-Saccadic Temporal Uncertainty  
*Girish Kumar, Scott Stevenson*

D21 **482** Modulation of feature fusion by visual masking  
*Johannes Rüter, Frank Scharnowski, Michael Herzog*

D22 **483** Subjective area size influences time perception  
*Fuminori Ono, Jun-ichiro Kawahara*

D23 **484** Subjective time expansion through cross-modal integration  
*Kuan-Ming Chen, Hao-Hsiang You, Su-Ling Yeh*

D24 **485** Flash visibility degradation compresses apparent-brief inter-flash intervals as does saccadic eye movement.  
*Masa-hiko Terao, Junji Watanabe, Akihiro Yagi, Shin'ya Nishida*

D25 **486** A cortical locus for post adaptation facilitation in spatio-temporal vision  
*Peter Bex, Keith Langley, John Cass*

D26 **487** Contrast masking using VEP state triggered kernel estimation (STKE)  
*Justin Ales, Thom Carney, Stanley Klein*

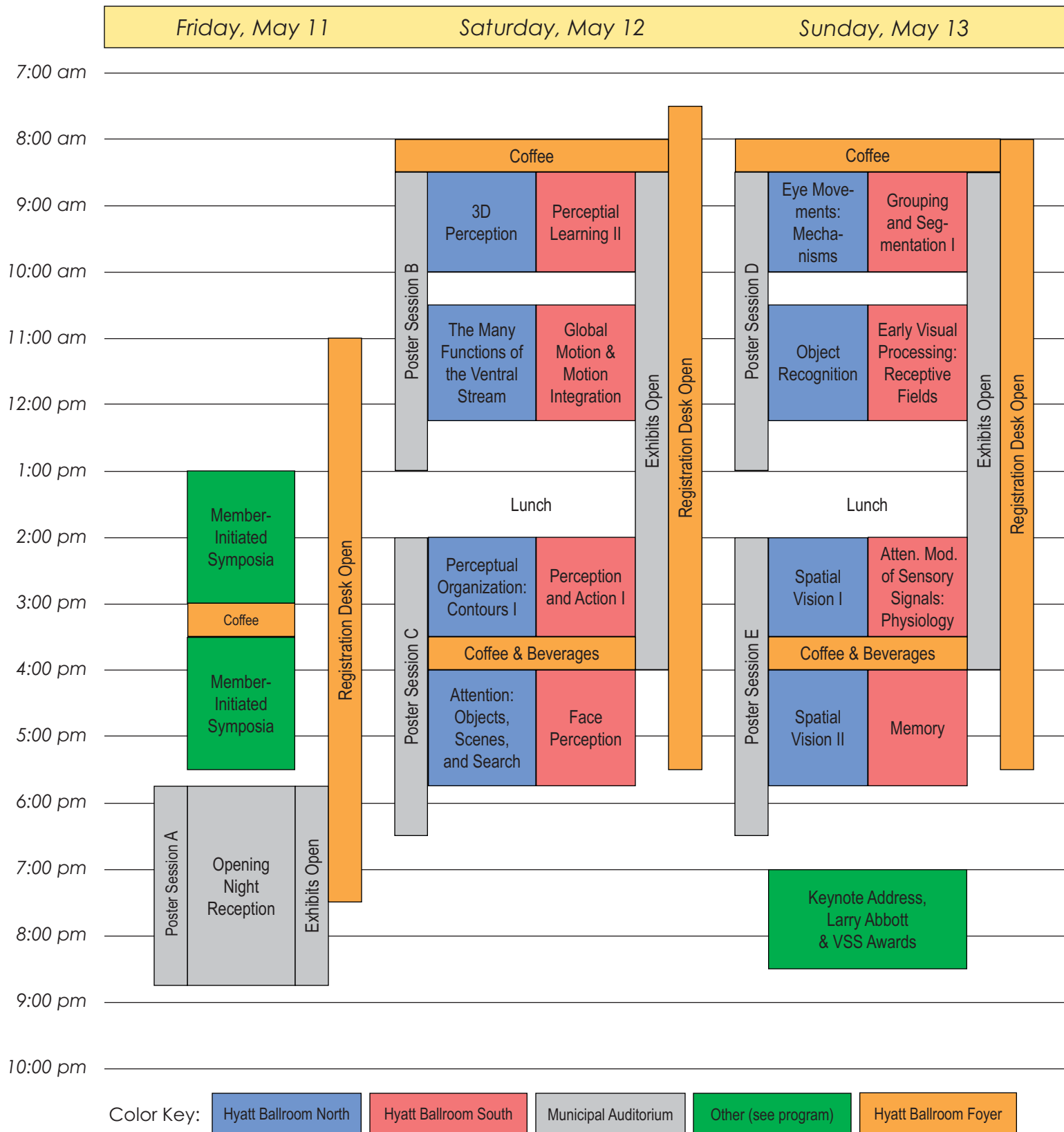
D27 **488** Perception correlates with feedback but not with feedforward activity in human visual cortex  
*Johannes J. Fahrenfort, H. Steven Scholte, Victor A. F. Lamme*

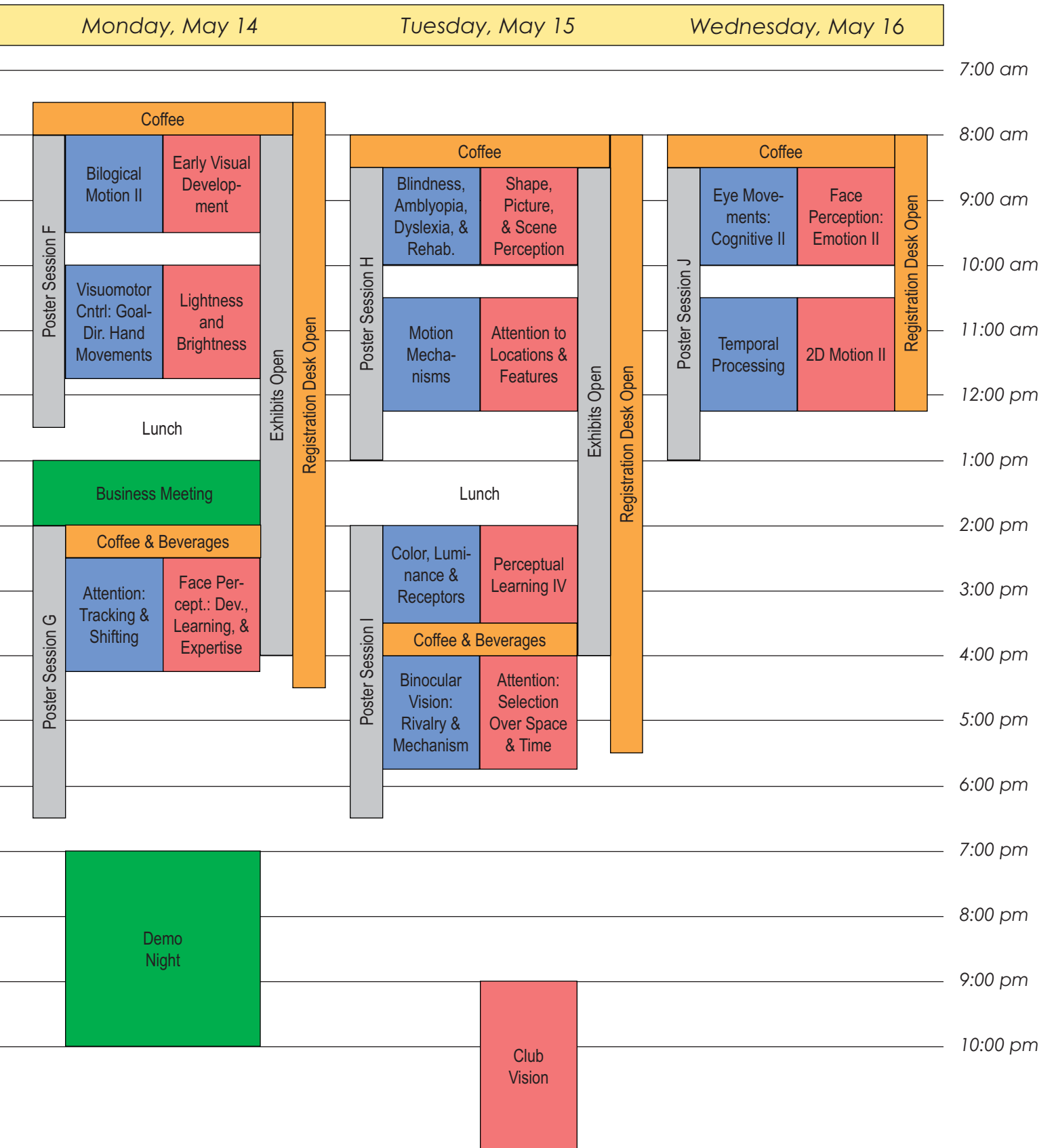
D28 **489** A Synchrony-Based Sparse Code in Cat Visual Cortex Signals Complex Contours in Natural Images  
*Melanie Bernard, Zhiyi Zhou, A.B. Bonds*

D29 **490** Temporal and Frequency Analysis of Synchronized Neural Responses in Cat Visual Cortex  
*Zhiyi Zhou, Melanie R. Bernard, A.B. Bonds*

D30 **491** A Velocity Association Field for Visual Synchrony  
*Aaron Clarke, Stéphane Rainville*

# Schedule-at-a-Glance





**Motion Integration**

Author Presents: 10:30 am - 12:15 pm

- D31 **492** Response properties of MT neurons in amblyopic macaques *Yasmine El-Shamayleh, Adam Kohn, J. Anthony Movshon, Lynne Kiorpes*
- D32 **493** Second-order optic flow processing in amblyopia. *Craig Aaen Stockdale, Robert F. Hess, Timothy Ledgeway*
- D33 **494** Global Motion: effects of spatial scale and eccentricity *Robert Hess, Craig Aaen-Stockdale*
- D34 **495** The role of path continuity in motion integration-across space and time *Mehdi Aghdaee, Patrick Cavanagh*
- D35 **496** Neural mechanisms underlying motion opponency in hMT+ *Javier Garcia, John Pyles, Emily Grossman*
- D36 **497** Motion capture is motion integration *Alex Huk, Jeremy Freeman, Frank Durgin*
- D37 **498** Motion integration across space for non-rigid objects *Camilla McG Magnussen, Harry Orbach, Gunter Loffler*
- D38 **884** Visual motion area MT+ carries precise information about object position. *Nicole Spotswood, David Bressler, David Whitney*
- D39 **500** Transcranial magnetic stimulation (TMS) disrupts processing of translational, radial and rotational global motion within distinct epochs *Laura Stevens, Paul McGraw, Timothy Ledgeway*
- D40 **501** Effects of Reference Stimuli on Motion Sensitivity *Yu-Chin Chai, Bart Farell*
- D41 **502** What determines the perceived direction of global motion in displays composed of asymmetric distributions of local motions? *Timothy Ledgeway, Ben Webb, Paul McGraw*
- D42 **503** On the contribution of form and motion cues in the perception of transparency *Andrew Meso, Johannes Zanker*
- D43 **504** The spatial tuning of visual motion contour detection in humans *Szonya Durant, Johannes Zanker*
- D44 **505** The role of color vision in translation and radial global motion processing *Magda L. Michna, Kathy T. Mullen*
- D45 **506** Visual tracking of ambiguous moving objects: A recursive Bayesian model *Anna Montagnini, Pascal Mamassian, Laurent Perrinet, Guillaume Masson*
- D46 **507** Grouping By Visual Synchrony – Separate Motion And Flicker Pathways *Stéphane Rainville*
- D47 **508** Direction Encoding in Infants is Sensitive to Occlusion Cues *Vaniitha Sampath, Gene Stoner, Karen Dobkins*
- D48 **509** Age related differences in the perception of global motion: local motion and stimulus size effects *Jeffrey D. Bower, George J. Andersen*
- Perception and Action II**  
Author Presents: 8:30 - 10:15 am
- D49 **510** Anticipatory vs. reactive Response Times: a new method to compare perceptual and motor latencies *Pedro Cardoso-Leite, Andrei Gorea, Pascal Mamassian*
- D50 **511** The Perceptual-Motor dissociation tested negatively with a standard 2AFC task *Andrei Gorea, Pedro Cardoso-Leite*

- D51 **512** Action, but not Perception, Relies on Continuous Presentation of External Objects *San-Yuan Lin, Chia-Chien Wu, Yi-jia Su, Su-Ling Yeh*
- D52 **513** Visually mismatched feedback within a head-mounted display affects a perceptual-motor but not a cognitive real world egocentric distance response *Betty J. Mohler, Sarah H. Creem-Regehr, William B. Thompson*
- D53 **514** Children combine visual cues for perception and action unevenly in working memory *Marko Nardini, Oliver Braddick, Janette Atkinson, Taski Ahmed, Eleanor Swain*
- D54 **515** Visual and visuomotor crowding *Paul F. Bulakowski, Robert B. Post, Michael D.K. Nguyen, David Whitney*
- D55 **516** Visually Directed Action: Learning to Compensate for Perceptual Errors *John Foley*
- D56 **517** Subjective Control and Motor Behavior in a Goal-Driven Visuomotor Task *John Dewey, Adriane Seiffert*
- D57 **518** Attentional versus intentional biases in hand movements: Hand specific coupling and bimanual reaching *Gavin Buckingham, David P. Carey*
- D58 **519** Action observation leads to motor learning. An rTMS study. *Liana Brown, Elizabeth Wilson, Paul Gribble*
- D59 **520** Factors that decline a manual dexterity on persons with mental retardation: an analysis of tasks, motions, and eye movements in the time course. *Kohei Oka, Toshiaki Miura*
- D60 **521** Does perceived effort influence verbal reports of distance? *Adam J. Woods, John Philbeck*
- D61 **522** Does perceived effort influence verbal reports of shape? *John Philbeck, Adam J. Woods*
- D62 **523** Handedness Effects Body Schema *Linkenauger Sally, Witt Jessica, Bakdash Jonathon, Proffitt Dennis*
- D63 **524** Hemispheric Differences in the Perception of Hills *Jonathan Zadra, Dennis Proffitt*
- D64 **525** Exploring the boundaries of unconscious processing: Response inhibition can be triggered by masked stop-signals *Simon van Gaal, K. Richard Ridderinkhof, Wery P. M. van den Wildenberg, Victor A. F. Lamme*
- D65 **526** Tracing sequential waves of rapid visuomotoractivation in lateralized readiness potentials *Thomas Schmidt, Nuria Vath*
- D66 **527** Effect of spatial integration of visual motion on the quick manual response and related brain activity *Hiroaki Gomi, Kaoru Amano, Toshitaka Kimura*
- D67 **528** Optimal Weighting of Speed and Accuracy in a Sequential Decision-Making Task *Kyler Eastman, Brian Stankiewicz, Alex Huk*
- D68 **529** Grasping the function of tools: fMRI suggests that the ventral but not the dorsal stream codes the functional significance of familiar objects *Kenneth Valyear, Jody Culham*
- D69 **530** Motor facilitation under binocular rivalry: the effect of suppressed motor affordances. *Jorge Almeida, Bradford Mahon, Alfonso Caramazza*



**Attention: Selection, Enhancement, and Orienting**

Author Presents: 10:30 am – 12:15 pm

- D70 **531** Attending to peripheral cues distorts objects, but attending to central cues does not *Sara Stevens, Jay Pratt*
- D71 **532** Probing the missing link between sources and targets of attentional control: a concurrent TMS/fMRI study of visuospatial selection *Klaartje Heinen, Christian Ruff, Sven Bestmann, Felix Blankenburg, Jon Driver, Bertram Schenkluhn, Otto Bjoertomt, Vincent Walsh, Chris Chambers*
- D72 **533** Top-down attentional modulation of visual neglect in cancellation tasks *Margarita Sarri, Jon Driver*
- D73 **534** Faster, more intense! The Relation between Attention-induced Event-Related Potential Amplitudes, and Speed of Responding *Durk Talsma, Manon Mulckhuysse, Jan Theeuwes*
- D74 **535** The Locus of Processing Interference Produced by Salient Visual Distractors *Edward F. Ester, Edward Awh*
- D75 **536** Features or space: Which dominates attentional selection? *Iliia Korjoukov, Pieter Roelfsema, Jillian Fecteau*
- D76 **537** Equisalience This ! *Frédéric Poirier, Frédéric Gosselin, Martin Arguin*
- D77 **538** Spatial and temporal range for nonretinotopic integration of color and motion. *Wei-Lun Chou, Patrick Cavanagh*
- D78 **539** Category expectation facilitates discrimination of complex objects *Amrita Puri, David Whitney, Charan Ranganath*
- D79 **540** Faces Show No Prior Entry Effects *Greg West, Jay Pratt*
- D80 **541** What's in a name? Species of Redundancy in Visual Target Detection *Boaz Ben-David*
- D81 **542** Priming effects reveal distinct attentional mechanism *Kimberly Halvorson, Eliot Hazeltine, William Prinzmetal*
- D82 **543** On the relationship between flanker interference and localized attentional interference *Jason S. McCarley, Jeffrey R. W. Mounts*
- D83 **544** Attention does not influence critical spacing *Miranda Scolari, Andrew Kohlen, Brian Barton, Edward Awh*
- D84 **545** Viewpoint Invariant Object Features Attract Overt Visual Attention *Jeremiah D. Still, Veronica J. Dark, Derrick J. Parkhurst*
- D85 **546** Endogenous orienting of attention is impervious to masked priming *Jay Todd, René Marois*
- D86 **547** Time-words guide spatial attention *Ulrich Weger, Jay Pratt*
- D87 **548** Spatial limits of shifting attention as revealed through the attentional walk task *Elisabeth Hein, Cathleen M Moore*
- D88 **549** Feature Binding and Spatial Awareness *Lynn Robertson, Thomas VanVleet*

**POSTER SESSION E**Sunday, May 13, 2:00 - 6:30 pm,  
Municipal Auditorium**Color and Surface Perception**

Author Presents: 4:00 - 5:45 pm

- E1 **550** The appearance of glossy, bumpy surfaces *Yun-Xian Ho, Michael S. Landy, Laurence T. Maloney*
- E2 **551** Specular reflectance and the perception of metallic surfaces *Isamu Motoyoshi, Takafumi Nishizawa, Keiji Uchikawa*
- E3 **552** Coding Contrast as Brightness to Convert Colour Images to Greyscale *Marina Bloj, David Connah, Graham Finlayson*
- E4 **553** Abstract withdrawn
- E5 **554** Isolusions: Evidence for strong geometric-optical illusions under isoluminance *Thorsten Hansen, Kai Hamburger, Karl Gegenfurtner*
- E6 **555** Plasmid illusion : symmetrical composition for equiluminance condition *Seiichiro Naito, Naoko Kato*
- E7 **556** Evidence for common mechanisms subserving chromatic assimilation and Munker-White effect *Yung-Chun Lin, Chien-Chung Chen*
- E8 **557** Very-long-term chromatic adaption from short-term adapting stimulation *Suzanne Belmore, Steven Shevell*
- E9 **558** Color constancy in 3D scenes: contrasting illumination-estimation and heuristic models *Laurence T. Maloney, Katja Doerschner, David H. Brainard*
- E10 **559** Relational Color Constancy in the Absence of Ratio Constancy: 3D Scenes with Spatially Inhomogeneous Illumination *Holly E. Gerhard, Laurence T. Maloney, Razia Khan*
- E11 **560** Memory color effects on color appearance under varying illumination *Maria Olkkonen, Thorsten Hansen, Karl Gegenfurtner*
- E12 **561** Neural correlates of color category processing *Elisabeth Fonteneau, Jules Davidoff*
- E13 **562** Color preferences across contexts as predicted by colorimetric variables *Karen B. Schloss, Stephen E. Palmer*
- E14 **563** The hedonics of colour *David Simmons, Katy Asher*
- Perceptual Learning III**  
Author Presents: 2:00 - 3:45 pm
- E15 **564** Effects of experience and task type on unsupervised categorization of novel, 3D objects *Theresa Cooke, Christian Wallraven, Heinrich Buelthoff*
- E16 **565** Learning effects on dual-task *Xiaohua Zhuang, Xiaotao Su, Zoltan Vidnyanszky, Thomas Papathomas*
- E17 **566** Visual search training does not eliminate the dual-target cost in search for two types of target. *Tamaryn Menneer, Mark E. Auckland, Nick Donnelly, Kyle R. Cave*
- E18 **567** The Specificity of Learning Position Discrimination: Noise and Stimulus Features *Roger Li, Charlie Ngo, Dennis Levi, Jussi Saarinen*

E19 **568** Location Specificity of Perceptual Learning of Depth Discrimination in Random-Dot Stereograms *Liat Gantz, Susana T.L. Chung, Ronald S. Harwerth*

E20 **569** Stimulus-Specific Perceptual Learning for Chromatic, but not Luminance, Contrast Detection *Carly Thurston, Karen Dobbins*

E21 **570** Visual-spatial perceptual learning is specific to the context of trained stimulus display durations *Angela Vavassis, Michael, W. von Grünau*

E22 **571** Optimal Feature Integration in Image-Based Discrimination Task *Melchi Michel, Robjert Jacobs*

E23 **572** The adult amblyopic visual system exhibits greater plasticity *Chang-Bing Huang, Zhong-Lin Lu, Yifeng Zhou*

E24 **573** Perceptual Learning and Adaptation in the Perception of Self Motion *Frank Durgin, Kristina Simmons*

### Biological Motion I

Author Presents: 2:00 - 3:45 pm

E25 **574** Quantifying the Contribution of Structure Information in Direction Discrimination of Scrambled Walkers *Lawrie McKay, Phil McAleer, David Simmons, Frank Pollick*

E26 **575** Seeing pedestrians at night: The benefits of biological motion are robust to clutter *Richard Tyrrell, Joanne Wood, Alex Chaparro, Trent Carberry, Byoung Sun Chu, Ralph Marszalek*

E27 **576** Temporal summation, form, and motion complexity in biological and non-biological motion. *Eric Hiris, Hillary Leech*

E28 **577** Motion and the Uncanny Valley *Gavin White, Lawrie McKay, Frank Pollick*

E29 **578** Dynamic "Bubbles": A novel technique for analyzing the perception of biological motion *Steven Thurman, Emily Grossman*

E30 **579** Replacing point lights with complex dissimilar elements disrupts biological motion perception *Amelia Hunt, Fred Halper*

E31 **580** Life is Not Just in the Fast Lane: Dissociating the perceptions of speed and animacy *Paul A. Szego, M.D. Rutherford*

E32 **581** Animacy and direction from point-light displays: Is there a life detector? *Dorita H. F. Chang, Nikolaus F. Troje*

E33 **582** Point-light walkers with and without local motion features for determining direction *Daniel R. Saunders, Julia Suchan, Nikolaus F. Troje*

E34 **583** Sex classification of point-light walkers: Viewpoint, structure, kinematics *Anna Halevina, Nikolaus F. Troje*

E35 **584** "Life Detection" in Central and Peripheral Vision *Kathryn Williamson, Lorna Jakobson, Nikolaus Troje*

E36 **585** Amblyopic perception of biological motion *Benjamin Thompson, Bruce C. Hansen, Robert F. Hess, Nikolaus F. Troje*

E37 **586** Biological motion perception in healthy elderly *Andrea Piotrowski, Lorna Jakobson, Nikolaus F. Troje*

E38 **587** Sparing of Sensitivity to Biological Motion after Early Visual Deprivation *Terri Lewis, Alejo Freire, Daphne Maurer*

E39 **588** Systematic variation in sensitivity to biological motion in typical adults. *Martha Kaiser, Maggie Shiffrar*

E40 **589** Incidental Processing Of Biological Motion In Parietal Patients *Lorella Battelli, Bradford Mahon, Ian Thornton*

E41 **590** Gender Differences in Event Recognition of Video-game Baseball Pitches *Katherine Olson, Emily Wickelgren*

E42 **591** The Relation between Motor Cortex Activity and Perception of Form Coherence for Biological Motion Stimuli *Shannon Fitzhugh, Thomas Shipley, Peter Marshall*

E43 **592** Brain areas involved in biological motion perception: What is involved and what is necessary *Ayse Pinar Saygin*

### Face Perception: Parts, Wholes, Features, and Configurations

Author Presents: 4:00 - 5:45 pm

E44 **593** Asymmetrical Distribution of Face-directed Fixations in Audiovisual Speech Perception Reflects Viewer's Strategy *Ian Everdell, Heidi Marsh, Micheal Yurick, Kevin Munhall, Martin Pare*

E45 **594** The influence of number of eye fixations on face recognition *Janet Hsiao, Garrison Cottrell*

E46 **595** Spatial location of critical facial motion information for PCA-based performance-driven mimicry *Fatos Berisha, Alan Johnston, Peter McOwan*

E47 **596** Natural Image Statistics Suggest a Basis for Representations of Head Rotation *Hugh R. Wilson, Frances Wilkinson*

E48 **597** Stimulus requirements for perceiving a face: an analysis based on "totem poles" *Carrie Paras, Kyle McDermott, Shernaaz Webster, Michael Webster*

E49 **598** Classification images for sampled stimuli: Comparing face processing in typical and autistic observers *Masayoshi Nagai, Patrick J. Bennett, Melissa D. Rutherford, Carl M. Gaspar, Diana Carbone, Masako Nara, Hijiri Ishii, Takatsune Kumada, Allison B. Sekuler*

E50 **599** On the distances between internal human facial features *Frédéric Gosselin, Isabelle Fortin, Caroline Michel, Philippe Schyns, Bruno Rossion*

E51 **600** The ecological utility of inter-feature distances for human face discrimination *Carl Gaspar, Patrick Bennett, Allison Sekuler*

E52 **601** The composite face effect is not correlated with face identification accuracy *Yaroslav Konar, Patrick J. Bennett, Allison B. Sekuler*

E53 **602** Holistic face processing can be independent of gaze behavior: Evidence from the face composite effect *Adelaide de Heering, Bruno Rossion, Chiara Turati, Francesca Simion*

E54 **603** Face discrimination does not rely on configural information. *Pamela M. Pallett, Donald I. A. MacLeod*

E55 **604** Looking for Holistic Processing in Face Perception *Brandon Wagar, Daniel Bub, James Tanaka*

E56 **605** Holistic processing, crowding, and perceptual and decisional dependencies *Brianna Sullivan, Michael Wenger, Jennifer Bittner, Rebecca Von Der Heide*

E57 **606** Revisiting the role of spatial frequencies in the holistic processing of faces *Olivia S. Cheung, Jennifer J. Richler, Thomas J. Palmeri, Isabel Gauthier*

- E58 **607** Comparing the loci of holistic processing in people and models *Michael L. Mack, Jennifer J. Richler, Isabel Gauthier, Thomas J. Palmeri*
- E59 **608** Comparing Thompson's Thatcher effect with faces and non-face objects *Elyssa Twedt, David Sheinberg, Isabel Gauthier*
- E60 **609** Using the Temporal Dynamics of the Face Inversion Effect as a Means to Identify Contributing Configural and Part Dimensions *Noah Schwartz*
- E61 **610** Subject Error Patterns Expose a Bias Toward Configural Information When Viewing Inverted Faces *Shuinn Chang, Marisa Crawford, Noah Schwartz*
- E62 **611** Long-range and short-range relations in the perception of the vertical position of the eyes in inverted faces. *Alla Sekunova, Jason Barton*
- E63 **612** The Perception of Age in Human Faces: Upright & Inverted Results *Patricia Costello*

### Reading

Author Presents: 2:00 - 3:45 pm

- E64 **613** Diagnostic features for uppercase and lowercase letter recognition *Catherine Éthier-Majcher, Daniel Fiset, Caroline Blais, Martin Arguin, Daniel Bub, Frédéric Gosselin*
- E65 **614** Visual processing of words and spatial information for action *Yann Coello, Angela Bartolo, Alexia Weisbecker*
- E66 **615** TMS stimulation of V5 interferes with single word reading *Sheila Crewther, Robin Laycock, Paul Fitzgerald, David Crewther*
- E67 **616** fMRI-RA evidence for a neural representation in the "Visual Word Form Area" based on whole words *Laurie Schwarz Glezer, Xiong Jiang, Maximilian Riesenhuber*
- E68 **617** Size of the Visual Span May Explain Reading-Speed Differences for Horizontal and Vertical Text *Deyue Yu, David Gerold, Gordon E. Legge, Allen MY Cheong, Heejung Park*
- E69 **618** Effect of line spacing on reading speed in normally-sighted subjects with an artificial scotoma *Jean-Baptiste Bernard, Anne-Catherine Scherlen, Françoise Vitu-Thibault, Eric Castet*
- E70 **619** Crowding accounts for the limits of amblyopic reading *Denis Pelli, Shuang Song, Dennis Levi*
- E71 **620** MagnoFly: game-based screening for dyslexia *James Ferwerda, Brendan Rehon*
- E72 **621** Training Direction Discrimination Rapidly Remediate a Wide Spectrum of Reading Deficits *Teri Lawton*
- E73 **622** Age, Memory, and Polarity: The Ability to Remember Text, as Affected by Age, Paper versus Computer, and Polarity (Black vs. White Text and Background) *Faith Florer, Jemma Lampkin, E. Corey Lawrence, Veronique Pardieu, Katherine Lu*

### Special Populations: Disorder and Disease

Author Presents: 2:00 - 3:45 pm

- E74 **623** Is residual vision in monkeys with unilateral lesion in the primary visual cortex like normal, near-threshold vision? *Masatoshi Yoshida, Kana Takaura, Tadashi Isa*
- E75 **624** Hemianopic gaze dynamics in a naturalistic task *Tim Martin, Kristin Kelly, Meghan Riley, Mary Hayhoe, Krystal Huxlin*

- E76 **625** Consequences of central vision loss for eye movements in natural tasks. *Brian Sullivan, Jelena Jovancevic, Mary Hayhoe, Gwen Sterns*
- E77 **626** Possible Role of Peripheral Vision in Individuals with Retinitis Pigmentosa and those with Usher Syndrome *Valentina Arena, Alison Finlay, Brice Thurin, Bencie Woll*
- E78 **627** Make the clocks tick right: Influence of computer-based vision restoration therapy on temporal-information processing in partially blind patients. *Dorothe A. Poggel, Bernhard Treutwein, Bernhard A. Sabel, Hans Strasburger*
- E79 **628** Numerical estimation in blind subjects: Evidence of the impact of blindness *Julie Castronovo, Xavier Seron*
- E80 **629** Visual processing in infants with fragile X syndrome *Faraz Farzin, David Whitney, Randi Hagerman, Susan Rivera*
- E81 **630** The blinking emotional/attentional blink and the parietal lobe. *Ingrid Olson, Marian Berryhill, Steven Most*
- E82 **631** Synesthetic Color Appearance Is Immune To Brightness Contrast *Sang Wook Hong, Randolph Blake*
- E83 **632** Personifying Inanimate Objects in Synaesthesia *Jonathan Carriere, Kelly Malcolmson, Meghan Eller, Donna Kwan, Michael Reynolds, Daniel Smilek*
- E84 **633** Detection of imminent collisions by drivers with Alzheimer's Disease, Parkinson's Disease and Stroke *Lindsay M. Vaux, Rui Ni, Matthew Rizzo, Ergun Y. Uc, George J. Andersen*
- E85 **634** Applied Psychophysics: Estimating The Cost of Implementing an Early Vision Screening Program *Russell J. Adams, James R. Drover, Mary L. Courage*

### Attention and Inhibition

Author Presents: 4:00 - 5:45 pm

- E86 **635** Electrophysiological evidence of inhibition of focused-attention in the distractor previewing effect *Eunsam Shin, Xiaolang Irene Wan, Monica Fabiani, Gabriele Gratton, Alejandro Lleras*
- E87 **636** Role of striatal visual pathway in Inhibition of Return *Takuro Ikeda, Tadashi Isa*
- E88 **637** Does the distractor preview effect extend to search-irrelevant features? *Brian Levinthal, Alejandro Lleras*
- E89 **638** What is being marked in visual marking? *Hengqing Chu, Brian Levinthal, Alejandro Lleras*
- E90 **639** Greater disruption by sub-threshold task-irrelevant signals *Yoshiaki Tsushima, Yuka Sasaki, Takeo Watanabe*
- E91 **640** Inattentional Blindness, Object Persistence, and Foveal Inhibition *Alex White, Brian Scholl*
- E92 **641** Exploring parvocellular and magnocellular pathway contributions to location-based inhibition of return. *Benjamin A. Guenther, James M. Brown*
- E93 **642** Age Differences in Inhibition of Return and Inhibitory Tagging during Spatial Orienting of Attention *Linda Langley, Nora Gayzur, Ana Vivas, Luis Fuentes, Alyson Saville*

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## Talk Sessions, Monday, May 14

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**TALK SESSION**

Monday, May 14, 8:00 - 9:30 am,  
Hyatt Ballroom South

**Early Visual Development**

Moderator: Karen Dobkins

- 8:00 **643** Development of temporal contrast sensitivity in monkeys *Lynne Kiorpes, Kara Stavros*
- 8:15 **644** Direction-reversal Vep's Are Delayed In Development Of Premature Infants: Early Dorsal-stream Vulnerability? *Janette Atkinson, Deirdre Birtles, John Wattam-Bell, Andrew Wilkinson, Oliver Braddick*
- 8:30 **645** Teasing Apart Contributions of Visual Experience and Biological Maturation on the Development of Contrast Sensitivity *Karen Dobkins, Rain Bosworth, Joseph McCleery*
- 8:45 **646** Orientation perception in Williams Syndrome: discrimination and integration *Melanie Palomares, Barbara Landau, Howard Egeth*
- 9:00 **647** Five-to seven-month-old infants perceive the corridor illusion *Albert Yonas, Carl Granrud, Maria Le, Kate Forsyth*
- 9:15 **648** Mooney image perception in preschool-aged children *Jennifer Yoon, Jonathan Winawer, Nathan Wittoft, Ellen Markman*

**TALK SESSION**

Monday, May 14, 8:00 - 9:30 am,  
Hyatt Ballroom North

**Biological Motion II**

Moderator: Niko Troje

- 8:00 **649** Rapid Serial Action Presentation: New paradigm for the study of movement recognition *Thomas Serre, Martin Giese*
- 8:15 **650** The importance of skeletal information in biological motion perception revealed by ideal observer analysis *Hongjing Lu, Zili Liu, Bosco Tjan*
- 8:30 **651** Isolating the neural encoding of the local motion component in biological motion *Yi Jiang, Sheng He*
- 8:45 **652** Psychophysical dissociation between global and local mechanisms in biological motion perception *Nikolaus F. Troje, Dorita H. F. Chang*
- 9:00 **653** Human Recognition of Action Blends *Frank Pollick, Phil McAleer, Michael Gleicher, Joris Vangeneugden, Ruffin Vogels*
- 9:15 **654** Not just the face: asymmetry of emotional body expression *Claire L. Roether, Lars Omlor, Martin A. Giese*

**TALK SESSION**

Monday, May 14, 10:00 - 11:45 am,  
Hyatt Ballroom South

**Lightness and Brightness**

Moderator: Arthur Shapiro

- 10:00 **655** Spatial scale and simultaneous contrast phenomena *Arthur Shapiro, Jared Smith, Emily Knight*
- 10:15 **656** The role of layered decomposition in lightness perception *Marc Albert*
- 10:30 **657** Factors in gamut compression in the staircase Gelb effect *Alan Gilchrist, Ana Radonjic*
- 10:45 **658** Lightness Anchoring: One Anchor or Multiple Anchors? *Michael E. Rudd*
- 11:00 **659** A whiter shade of pale: Why only three terms for lightness? *David Attewell, Roland Baddeley*
- 11:15 **660** Achromatic Color Naming *Delwin Lindsey, Angela Brown*
- 11:30 **661** Visual Perception of Refractive Materials *Roland Fleming, Frank Jäkel, Laurence Maloney*

**TALK SESSION**

Monday, May 14, 10:00 - 11:45 am,  
Hyatt Ballroom North

**Visuomotor Control: Goal-Directed Hand Movements**

Moderator: Anne-Marie Brouwer

- 10:00 **662** Humans optimally integrate memory and vision to plan pointing movements *Anne-Marie Brouwer, David Knill*
- 10:15 **663** Humans control reach timing to balance sensory and motor uncertainty and maximize reach accuracy *Peter Battaglia, Paul Schrater, Daniel Kersten*
- 10:30 **664** Comparing the latencies with which various attributes can be used to guide the human hand *Margot Veerman, Eli Brenner, Jeroen BJ Smeets*
- 10:45 **665** Eye movements in a spatially and temporally demanding interception task *Eli Brenner, Jeroen BJ Smeets*
- 11:00 **666** Missing In Action: Obstacle Avoidance While Reaching *Craig Chapman, Melvyn Goodale*
- 11:15 **667** Correct on-line adjustment but impaired response inhibition to perturbed targets in a patient with hemispatial neglect *Stephanie Rossit, Rob McIntosh, Stephen Butler, Monika Harvey*
- 11:30 **668** Hand trajectories reveal cognitive states *Ken Nakayama, Joo-Hyun Song, Matthew Finkbeiner, Alfonso Caramazza*

**TALK SESSION**

Monday, May 14, 2:30 - 4:15 pm,  
Hyatt Ballroom South

**Face Perception: Development, Learning, and Expertise**

Moderator: James Tanaka

- 2:30 **669** Discovering faces in infancy *Pawan Sinha, Benjamin Balas, Yuri Ostrovsky*
- 2:45 **670** Holistic processing for faces is sensitive to image-plane but not depth rotations: Support for an innate face template. *Elinor McKone*
- 3:00 **671** Face identity adaptation effects across illumination change *Fang Jiang, Volker Blanz, Alice O'Toole*
- 3:15 **672** Familiarity Modulates Holistic Processing in the Fusiform Face Area *Alison Harris, Geoffrey Aguirre*
- 3:30 **673** Culture shapes eye movements during face identification *Rachael Jack, Caroline Blais, Christoph Scheepers, Daniel Fiset, Roberto Caldara*
- 3:45 **674** The behavioral plasticity of the other-race face effect: A test of the perceptual expertise hypothesis *James Tanaka, Danielle Droucker, Daniel Fiset*
- 4:00 **675** The neural correlates of face-like expertise in fingerprint examiners *Bethany Schneider, Jordan DeLong, Dean Wyatte, Karin James, Tom Busey*

**TALK SESSION**

Monday, May 14, 2:30 - 4:15 pm,  
Hyatt Ballroom North

**Attention: Tracking and Shifting**

Moderator: Steven Franconeri

- 2:30 **676** Spatial attention remains in retinotopic coordinates following saccades *Julie D. Golomb, Marvin M. Chun, James A. Mazur*
- 2:45 **677** Can we maintain multiple attentional control sets over distinct regions of space? *Maha Adamo, Carson Pun, Jay Pratt, Susanne Ferber*
- 3:00 **678** Neural evidence for persistent representation of tracked objects during occlusion *Trafton Drew, Todd S. Horowitz, Edward K. Vogel*
- 3:15 **679** Moons in orbit: How are targets distinguished from distractors in multiple-object tracking? *Michael N Tombu, Adriane E Seiffert*
- 3:30 **680** Attentive tracking involves a demand-based dynamic redistribution of attention. *Marcia Grabowecy, Lucica Iordanescu, Satoru Suzuki*
- 3:45 **681** Maintaining multiple attentional foci: spatial separation affects behavior but not posterior parietal activity *Won Mok Shim, George A. Alvarez, Yuhong V. Jiang*
- 4:00 **682** Rapid shifts of attention between two objects during spatial relationship judgments *Steven Franconeri, Todd Handy*

**Poster Sessions, Monday, May 14****POSTER SESSION F**

Monday, May 14, 8:00 am - 12:30 pm,  
Municipal Auditorium

**Spatial Vision: Mechanisms and Orientation**

Author Presents: 8:00 - 9:45 am

- F1 **683** S cone input to the chromatic Hermann grid illusion *James Comerford, Frank Thorn, Elizabeth Garland*
- F2 **684** Temporal properties of monocular perisaccadic spatial distortion *Zhi-Lei Zhang, Clifton Schor*
- F3 **685** Orientation discrimination in the periphery depends on the context *Laura Renninger, Preeti Verghese*
- F4 **686** An objective paradigm for the discrimination of visual uncertainty *Simon Barthelmé, Pascal Mamassian*
- F5 **687** Human Orientation Sensitivity During Object Perception *Henry Galperin, Peter Bex, Jozsef Fiser*
- F6 **688** Representing the orientation of objects: Evidence from adults' error patterns *Emma Gregory, Michael McCloskey*
- F7 **689** Bilateral and Unilateral Orientation Dynamics *Nestor Matthews, Kristin Cox*
- F8 **690** A blind subject can discriminate the orientation of a grating using electrical stimulation from an implanted retinal prosthesis *Avi Caspi, Matthew J. McMahon*
- F9 **691** Visual Discrimination During Controlled Retinal Image Motion *Ramon Iovin, Martina Poletti, Fabrizio Santini, Michele Rucci*
- F10 **692** Anisotropic Contrast Sensitivity During Viewing of Broadband Stimuli: Timing and Tuning *Yeon Jin Kim, Andrew M. Haun, Edward A. Essock*
- F11 **693** Internal and External Crowding in Recognition of Chinese Characters *Lei Liu, Jun-Yun Zhang, Cong Yu*
- F12 **694** Crowding is directed to the fovea and preserves only feature contrast *Yury Petrov, Ariella Poppel, Suzanne McKee*
- F13 **695** Abstract withdrawn
- F14 **696** Modulation of V1 response to a target by adjacent distractors in attended and non-attended conditions *Fang Fang, Sheng He*
- F15 **697** Anisotropic representation of oriented bars in human visual cortex is revealed by fMRI projective and receptive field mapping techniques *Kuwook Cha, Sang-Hun Lee*
- F16 **698** Multi-component correlate for lateral collinear interaction in the human visual cortex as revealed by Visual Evoked Potentials. *Anna Sterkin, Oren Yehezkel, Yoram Bonneh, Anthony Norcia, Uri Polat*
- F17 **699** Spatio-temporal tradeoff in neural processing of backward masking as revealed by visual evoked potentials. *Oren Yehezkel, Anna Sterkin, Yoram Bonneh, Anthony Norcia, Uri Polat*
- F18 **700** Computing the mean size is based on perceived size *Hee Yeon Im, Sang Chul Chong*

F19 **701** Processing of the Müller-Lyer Illusion by a Grey Parrot (*Psittacus erithacus*) *Irene Pepperberg, Jennifer Vicinay, Patrick Cavanagh*

### Perceptual Organization: Contours II

Author Presents: 10:00 - 11:45 am

F20 **702** Abstract withdrawn

F21 **703** Classification images reveal differences between spatial and spatiotemporal contour interpolation *Brian P. Keane, Philip J. Kellman, Cassandra M. Elwell*

F22 **704** The effect of aging on contour integration *Eugenie Roudaia, Patrick J. Bennett, Allison B. Sekuler*

F23 **705** Orientation tuning of contour integration *Bruce C. Hansen, Robert F. Hess*

F24 **706** Element grouping with semicircular contours. *Melanie L. Hamel, James L. Dannemiller*

F25 **707** Competition between real and illusory contours in early visual cortex revealed by a novel illusory contour stimulus (pure IC) *Barbara Dillenburg, Peter Kaskan, Haidong D. Lu, Anna W. Roe*

F26 **708** Shape and meaning in the perception of occlusion *Barbara Gillam*

F27 **709** The Influence of Stored Representations in Working Memory on Amodal Completion *Hyunkyoo Lee, Shaun P. Vecera*

F28 **710** Spatiotemporal interpolation behind moving occluder *Hideyuki Unuma, Hisa Hasegawa, Philip Kellman*

F29 **711** Memory for holes: Intrinsic vs. accidental shapes *Rolf Nelson, Jessica Thierman, Stephen Palmer*

F30 **712** Inverse Zoellner illusion due to implicit orientations *Pietronilla Penna, Baingio Pinna*

F31 **713** Comparisons of features within and between objects *Sarah Hawley, Jacob Feldman*

F32 **714** Perceptual decisions under risk in a motion-extrapolation paradigm *Shalin Shah, Manish Singh*

F33 **715** Bayesian Contour Detection *Jacob Feldman*

### Face Perception: Neural mechanisms

Author Presents: 10:00 - 11:45 am

F34 **716** Methodological issues in using spatial filters in ERP studies of face processing *Anastasia Flevaris, Lynn Robertson, Shlomo Bentin*

F35 **717** High Band Pass Filters of Face Images and their Effect on the N170 Event Related Potential *Lucy J. Troup, Michael A. Pitts, Bruce Draper, Erin K. Catellier*

F36 **718** Are inverted faces processed at a later stage? *Tom Busey, Bethany Schneider, Dean Wyatte, Jordan DeLong, Alex Burkhardt, Bosco Tjan*

F37 **719** The time course of the face inversion effect *Corentin Jacques, Bruno Rossion*

F38 **720** Face discrimination performance is not reflected in the N170 *Jesse Husk, Melissa Sergi, Tania Gora, Guillaume Rousselet, Patrick Bennett, Allison Sekuler*

F39 **721** Neural correlates of visual discrimination expertise: Chinese face versus Chinese character processing *Joseph McCleery, Liezhong Ge, Zhe Wang, Jie Tian, Leslie Carver, Kang Lee*

F40 **722** Critical spatial frequencies in the perception of letters, faces, and novel stimuli. *Ipek Oruc, Jason Barton*

F41 **723** Face Perception: Importance of Phase Alignments *Reza Farivar, Bruce Hansen, Robert Hess*

F42 **724** Identifying faces in two-tone ('Mooney') images: A psychophysical and fMRI study. *Jay Hegdé, Serena Thompson, Daniel Kersten*

F43 **725** Investigation of featural versus configural processing of faces in the middle fusiform gyrus *Valerie Goffaux, Bettina Sorger, Christine Schiltz, Rainer Goebel, Bruno Rossion*

F44 **726** fMRI evidence for multiple face processing pathways in the human brain *Laurence Dricot, Christine Schiltz, Bettina Sorger, Rainer Goebel, Bruno Rossion*

F45 **727** Face-selective activation in the middle fusiform gyrus in a patient with acquired prosopagnosia: abnormal modulation for face identity *Jennifer Steeves, Herbert Goltz, Laurence Dricot, Bettina Sorger, Judith Peters, A. David Milner, Melvyn Goodale, Bruno Rossion*

F46 **728** Clarifying the nature of facial identity and facial expression representations with an acquired case of prosopagnosia *Roberto Caldara, Daniel Fiset, Caroline Blais, Philippe Schyns, Christoph Scheepers, Eugene Mayer*

F47 **729** Extraordinary face recognition *Richard Russell, Brad Duchaine, Ken Nakayama*

F48 **730** Facial attraction: a study of the aesthetic dimension of face processing in prosopagnosia *Chris Waite, Rebecca Hefter, Itzhak Aharon, Chris Fox, Jason Barton*

F49 **731** Transient pupil constrictions when viewing human and macaque faces. *Claire A Conway, Benedict C Jones, Anthony C Little, Lisa M DeBruine, Arash Sahraie*

### Eye Movements: Attention and Search

Author Presents: 8:00 - 9:45 am

F50 **732** The Role of Bottom-Up and Top-Down Influences in Directing Primate Gaze Shifts *David Berg, Susan Boehnke, Robert Marino, Pierre Baldi, Doug Munoz, Laurent Itti*

F51 **733** The impact of content-independent mechanisms on guiding attention *Po-He Tseng, Ran Carmi, Ian G. M. Cameron, Doug Munoz, Laurent Itti*

F52 **734** Attention and saccades during an active visual task *Brian Schmitzer, John Wilder, Timothy Gersch, Barbara Doshier, Eileen Kowler*

F53 **735** Optimal searcher, saccadic targeting model, and human eye movements during search: Effects of target visibility maps *Wade Schoonveld, Miguel Eckstein*

F54 **736** Evidence for attention in the saccadic gap effect *Zhenlan Jin, Adam Reeves*

F55 **737** Exploring the distinction between semantic and spatial selective attention using eye movements *Christopher Masciocchi, Veronica Dark*

F56 **738** Endogenous shifts of attention during smooth pursuit initiation *David Souto, Dirk Kerzel*

### Attention: Divided Attention, Inattention, and Inhibition

Author Presents: 8:00 - 9:45 am

F57 **739** High attentional load reduces neural classification of orientation in early visual cortex *Christian Kaul, Nilli Lavie, Geraint Rees*

F58 **740** Attentional capacity limitations on the identification of alphanumeric characters, English words, and American Sign Language signs *Heather P. Knapp*

F59 **741** Distinguishing models of multifocal attention: It's a matter of time *Thomas Carlson, Rufin VanRullen, Hinze Hogendoorn, Frans Verstraten, Patrick Cavanagh*

F60 **742** Dividing attention between multiple targets: simultaneous or sequential allocation? *Rufin VanRullen, Thomas Carlson, Patrick Cavanagh*

F61 **743** Incompatibility of the object-judgment reference frames has costs in dual-object report deficits *Shiau-Hua Liu, Barbara Anne Doshier, Zhong-Lin Lu, Pamela Jeter*

F62 **744** Contribution of location uncertainty and feature similarity to illusory conjunction of basic visual features under limited attention *Li Jingling, Li Zhaoping*

F63 **745** The effects of unattended congruency on attended targets. *Jennifer L Boyer, James L Dannemiller*

F64 **746** Chromatic Pattern-Onset VEPs are Robust to Inattention. *Jennifer Highsmith, Zenaida Santiago, Michael A. Crognale*

F65 **747** Auditory cues facilitate both low-level and high-level unattended visual processing *Hao-Hsiang You, Su-Ling Yeh*

F66 **748** Electrophysiological evidence for different qualities of change detection and change blindness *Niko A. Busch, Ingo Freund, Christoph S. Herrmann*

F67 **749** Attentional Filtering of Repetitive Transients Reduces Change Blindness *Mark W. Becker, Sara Vera*

F68 **750** Change blindness as a result of a single mudsplash. *Makoto Ichikawa*

F69 **751** Processing of the ignored object during eye gaze cueing *Alexandra Frischen, Daniel Loach*

F70 **752** Congruent features of the target presented as distractors impair target detection *Chaturi Jayasuriya, Maarten Milders, Arash Sahraie*

F71 **753** Motor selection bias in a no-target, response choice version of the attentional cueing paradigm *Daryl Wilson, Jay Pratt*

F72 **754** Dissociation between eye-movements and right perceptual biases in chimeric face processing in right hemisphere lesioned patients *Monika Harvey, Stephen Butler, Keith Muir, Ian Reeves*

### Visual Working and Short-Memory Memory

Author Presents: 10:00 - 11:45 am

F73 **755** Infants' visual working memory for shape, luminance and color tested with equally salient objects. *Zsuzsa Kaldy, Erik Blaser*

F74 **756** Preserved visual representations despite change blindness in 11-month-old infants *Stephen Mitroff, Su-hua Wang*

F75 **757** Pre-cuing the number of objects modulates visual short-term memory performance *Michael Ambinder, Daniel Simons*

F76 **758** Implicit Colour Memory Mediated by Explicit Memory *Pauline Pearson, Sherri Smart*

F77 **759** Predicting Human Action from Gaze Cues *Nancy Carlisle, Daniel Levin*

F78 **760** Increasing Visual Short-Term Memory Load Impairs Object Processing in the Left Visual Field *Stephen M. Emrich, Susanne Ferber*

F79 **761** Prioritization of New Objects During Visual Search is Limited by the Capacity of Visual Short-Term Memory *Naseem Al-Aidroos, Stephen M. Emrich, Jay Pratt, Susanne Ferber*

F80 **762** The effects of spatial and object working memory on change detection using the flicker paradigm. *Bonnie Angelone, Melissa Beck, Kariann Amante, Kimberly Sikorski, Diana Klimas*

F81 **763** Do change detection measures underestimate the capacity of visual short-term memory? *Jean-François Delvenne, Axel Cleeremans, Cédric Laloyaux*

F82 **764** Proactive interference from items previously stored in visual short term memory *Tal Makovski, Yuhong V. Jiang*

F83 **765** Identifying a target during visual search affects the contents of working memory *Jason Wong, Matthew Peterson*

F84 **766** An ERP study of visual change detection. *Helene Gauchou, Agnieszka Wykowska, Anna Schubö, Kevin O'Regan*

F85 **767** Updating feature information about objects in visual short-term memory *Philip C. Ko, Adriane E. Seiffert*

F86 **768** Single-probe advantage in standard change detection task does not reflect memory for feature binding *Aki Kondo, Jun Saiki*

F87 **769** Direction specific impairments of spatial working memory as a consequence of saccadic remapping. *Brandon Vasquez, Jonathan Carriere, James Danckert*

### POSTER SESSION G

Monday, May 14, 2:00 - 6:30 pm,  
Municipal Auditorium

### Color Vision Mechanisms

Author Presents: 2:00 - 3:45 pm

G1 **770** Compensation for light loss due to filtering by the macular pigment: Specificity of the mechanism. *Max Snodderly, Randy Hammond, James Stringham, Bill Wooten*

G2 **771** How does the third red-green photopigment of color-defect carriers contribute to color vision? *Yang Sun, Steven Shevell*

G3 **772** Asymmetric pedestal masking of S-cone increments and decrements: Does sawtooth polarity matter? *Scott H. Gabree, Rhea T. Eskew, Jr.*

G4 **773** Chromatic discrimination of textured stimuli *Martin Giesel, Thorsten Hansen, Karl R. Gegenfurtner*

G5 **774** Evaluating chromatic contrast sensitivity functions during saccades *Wei-Chung Cheng*

- G6 **775** Abstract withdrawn
- G7 **776** Functional evidence for the maintenance of chromatic opponency across visual space *Jonathan Peirce, Paul McGraw*
- G8 **777** The spatiotemporal properties of the achromatic and chromatic Craik-O'Brien-Cornsweet effect *Frédéric Devinck, Thorsten Hansen, Karl Gegenfurtner*
- G9 **778** Chromatic VEP points to two systems for processing colour *David P Crewther, Sheila G Crewther*
- G10 **779** Chromatic Processing in Hemianopia *Nicola Ridgway, Mary-Joan MacLeod, Arash Sahraie*
- G11 **780** The bandwidth of chromatic mechanisms mediating visual search *Patrick Monnier*
- G12 **781** The role of categorical boundaries in visual search for colour *Ester Reijnen, Anina N. Rich, Michael J. Van Wert, Jeremy M. Wolfe*

### Attention: Interaction with Memory or Emotion

Author Presents: 4:00 - 5:45 pm

- G13 **782** Do the contents of working memory capture attention? Yes, but it's under control. *Suk Won Han, Min-Shik Kim*
- G14 **783** Effects of Visual-Spatial and Verbal Working Memory Load on Visual Attention and Driving Performance *Alex Chaparro, Satoru Tokuda, Nichole Morris*
- G15 **784** Attentional filtering efficiency and individual differences in VSTM capacity *Keisuke Fukuda, Edward Vogel*
- G16 **785** Spatial working memory loads can reduce search efficiency but not the rates of rapid resumption in interrupted visual search tasks *Jee-Won Ahn, Alejandro Lleras*
- G17 **786** Visual memory or visual features coded verbally? An effect of working memory load on guidance during visual search *Hyejin Yang, Gregory Zelinsky*
- G18 **787** Attentional Control: Be More Specific! *Sei-Hwan Oh, Margaret Sereno*
- G19 **788** Flexible target representations underlie repetition priming in visual search *Jennifer McBride, Ute Leonards, Iain D Gilchrist*
- G20 **789** 2 deg. narrowed field of view can explain the process speed of tactile search for change *Takako Yoshida, Kenji Yokoi, Yuki Miyazaki, Hiromi Wake, Tenji Wake*
- G21 **790** The temporal dynamics of visual sensory memory while tracking multiple moving dots *Sathyasri Narasimhan, Srimant Tripathy, Brendan Barrett*
- G22 **791** Midstream order deficit occurs with phonological encoding of order *Kazuhiko Yokosawa*
- G23 **792** Contextual Cueing and Response Conflict *Justin A. Junge, Marvin M. Chun*
- G24 **793** Emotional Repetition Blindness *Carys K. Ball, Jane E. Raymond*
- G25 **794** Affective consequences of exogenous attentional orienting *Helena J.V. Rutherford, Jane E. Raymond*
- G26 **795** Emotional consequences of stop-action responses to own- and other-race faces. *Nikki Westoby, Jane E. Raymond*

- G27 **796** Context Matters: The Influence of Facial Emotional Expression on Gaze-Triggered Orienting When Gazed-at Targets Have Emotional Meaning *Chris Kelland Friesen, Erin Kauffman, Kimberly Halvorson, Reiko Graham*
- G28 **797** Affect and Arousal Influence the Attentional Blink *James T Enns, Lisa Jefferies, Daniel Smilek, Eric Eich*

### Attention: Training Effects and Subitizing

Author Presents: 4:00 - 5:45 pm

- G29 **798** Training attention: Examining interactions between the attentional, motor, and oculomotor systems *Michael Dodd, Stefan Van der Stigchel, Daryl Wilson*
- G30 **799** Stimulus-specific improvements in attention with practice *Todd Kelley, Steven Yantis*
- G31 **800** Spatially specific training effects in multiple spotlight attention *Brittany S. Cassidy, Summer Sheremata, David C. Somers*
- G32 **801** Cognitive Rehabilitation of Patients with Hemispatial Neglect: Effects of Vigilance Training on Components of Attentional Processing *Thomas Van Vleet, Joseph DeGutis, Lynn Robertson*
- G33 **802** Abstract withdrawn
- G34 **803** Subitizing sets and set-based selection: Early visual features determine what counts as an individual for visual processing *Justin Halberda*
- G35 **804** Differential effects of attention on subitizing and estimation processes *Carly J. Leonard, Howard E. Egeth*
- G36 **805** Visual enumeration under load: also subitizing needs attention *Petra Vetter, Bahador Bahrami, Brian Butterworth*

### Search I

Author Presents: 4:00 - 5:45 pm

- G37 **806** In Difficult Visual Search, High Frequency Targets are Found at the Expense of Low Frequency Targets *Hayward J. Godwin, Tamaryn Menneer, Shaun Helman, Kyle R. Cave, Nick Donnelly*
- G38 **807** Correcting a miss: Error reduction in low-prevalence search *Mathias Fleck, Stephen Mitroff*
- G39 **808** Do rare features pop out? Exploring the boundaries of the low prevalence effect *Anina Rich, Melina Kunar, Michael Van Wert, Barbara Hidalgo-Sotelo, Jeremy Wolfe*
- G40 **809** "Curing" the prevalence effect in visual search *Michael Van Wert, Todd Horowitz, Jeremy Wolfe*
- G41 **810** Faster is not necessarily better in visual search *David E. Fencsik, Skyler S. Place, Jeremy M. Wolfe, Todd S. Horowitz*
- G42 **811** Time to Guide: Evidence for Delayed Attentional Guidance in Contextual Cueing *Melina Kunar, Stephen Flusberg, Jeremy Wolfe*
- G43 **812** Is superior visual search in autism due to memory in search? *Todd Horowitz, Jeremy Wolfe, Brandon Keelm, Christine Connolly, Robert Joseph*
- G44 **813** The Breakdown of Color Selectivity in Multitarget Search: Evidence from Eye Movements *Kyle Cave, Tamaryn Menneer, Michael Stroud, Nick Donnelly, Keith Rayner*
- G45 **814** People like big, bright things: Investigating the effects of saliency on visual search. *Yi-Fang Tsai, Matthew Peterson*



G46 **815** Manipulating the Availability of Visual Information in Search. *Joseph Schmidt, Gregory Zelinsky*

G47 **816** Simple Summation Rule for Optimal Eye Movement Selection *Jiri Najemnik, Wilson Geisler*

G48 **817** Perceptual Complexity in Visual Displays *Jing Xing, Chen Ling*

G49 **818** Eye movements across the macaque visual field during visually and memory guided search *Bernard P. Gee, William H. Merigan*

G50 **819** Where would you look? Guiding visual search with global spatial information. *Jeremy Wolfe, Ester Reijnen, Hareem Ahmad, Michael VanWert*

G51 **820** Searching for a target word in a web page: the three components of information seeking behavior *Rigutti Sara, Fantoni Carlo, Walter Gerbino*

G52 **821** Rapid Resumption: Temporal Asynchrony Reveals Contents of Perceptual Hypotheses *James Intriligator, Helen Tibboel, Chie Takahashi, James T. Enns*

G53 **822** Evaluating the Ability of Visual Search Models Suggested for Computer-Vision to Predict Human Performance *Yaffa Yeshurun, Tamar Avraham, Michael Lindenbaum*

G54 **823** ROC curves refute an unequal-variance account of search asymmetry *Richard Murray*

G55 **824** Collaborative search in real-world scenarios *Kelly A. Malcolmson, Michael G. Reynolds, Daniel Smilek*

### Eye Movements: Effects on Perception

Author Presents: 2:00 - 3:45 pm

G56 **825** New results in motion constancy during smooth pursuit eye movements. *Camille Morvan, Jacques Droulez, Mark Wexler*

G57 **826** Motion aftereffects of plaid stimuli for smooth pursuits *Kazumichi Matsumiya, Satoshi Shioiri*

G58 **827** Motion sensitivity changes depending on saccadic direction before saccadic eye movement *Hyung-Chul Li*

G59 **828** Abstract withdrawn

G60 **829** TMS over the posterior parietal cortex disrupts trans-saccadic memory *Steven L. Prime, Michael Vesia, J. Douglas Crawford*

G61 **830** Short-term and long-term influences on perisaccadic misperceptions *Antonella Kis, Matthias Niemeier*

G62 **831** Spatial context confines and distorts undergoing smooth pursuit mislocalization *Yasuki Noguchi, Shinsuke Shimojo*

G63 **832** Perisaccadic Flash Mislocalization Suggesting Compression Of Visual Space May Come From A Simple Monotonic Extraretinal Signal Whose Onset Time Varies Across The Retina *Jordan Pola*

G64 **833** Temporal interaction between visual and saccade-related signals in perceptual localization *Jan Churan, Alby Richard, Christopher Pack, Daniel Guitton*

G65 **834** Episodic Representations of Object Color *Sarah D. Vollmer, Robert D. Gordon*

G66 **835** Contrast sensitivity during smooth pursuit initiation *Alexander C. Schütz, Doris I. Braun, Karl R. Gegenfurtner*

G67 **836** fMRI BOLD signal varies proportionally with the size of small saccades in human V1 and V2 *Florian Baumgartner, Peter U. Tse, Mark W. Greenlee*

### Motion Adaptation & Aftereffects

Author Presents: 2:00 - 3:45 pm

G68 **837** Centrifugal propagation of motion adaptation effects across visual space *Paul McGraw, Neil Roach*

G69 **838** High spatial frequency superiority of MAE for global motion *Satoshi Shioiri, Kazumichi Matsumiya*

G70 **839** Linking Perceptual Motion Adaptation with Neural Adaptation in Human Visual Cortex *Hyun-Ah Lee, Sang-Hun Lee*

G71 **840** Enhancement of motion aftereffect by reference stimuli: a comparison between luminance and chromatic motions *Akiyuki Inokuma, Kazushi Maruya, Takao Sato*

G72 **841** Asymmetry between motion and stereo aftereffects following concurrent adaptation *Wonyeong Sohn, Sang-Hun Lee*

G73 **842** The effect of adaptor velocity on motion induced shifts in perceived position in visual and auditory domains. *Ross Deas, Neil Roach, Paul McGraw*

### Motion in Depth & Optic Flow

Author Presents: 2:00 - 3:45 pm

G74 **843** The temporal property difference and the way of interactions between monocular and binocular motion mechanisms *Ryusuke Hayashi, Kenichiro Miura, Hiromitsu Tabata, Kenji Kawano*

G75 **844** Probabilities of perceptual depth ordering in transparent motion and the relative effect of different depth cues *Ruben Moreno-Bote, Asya Shipiro, John Rinzel, Nava Rubin*

G76 **845** Does retinal slip explain deficits in the perception of depth from motion parallax? *Mark Nawrot, Lindsey Joyce, Parker Ogden*

G77 **846** The Effects of Blood Alcohol Content on Pursuit and Perceived Depth from Motion Parallax *Lindsey Joyce, Mark Nawrot*

G78 **847** Decoding visual awareness and voluntary control perception during ambiguous structure-from-motion *Gijs Joost Brouwer, Raymond van Ee*

G79 **848** Projected size and projected speed as indicators of change in motion path *Shaw Gillispie, Myron Braunstein, George Andersen*

G80 **849** The identification of a moving object by a moving observer. *Patrick Finn, Constance Royden*

G81 **850** Perception of radial motion in Japanese macaque (*Macaca fuscata*) infants *Nobu Shirai, Tomoko Imura, Yuko Hattori, Masaki Tomonaga, Masami K. Yamaguchi*

G82 **851** The role of area V5/MT+ in the centripetal bias in global motion perception *Deborah Giaschi, Amy Zwicker, Simon Au Young, Bosco Lee, Bruce Bjornson*

G83 **852** Decoding heading directions from human cortical activity. *Hiroaki Shigemasa, Yoichi Miyawaki, Yukiyasu Kamitani, Michiteru Kitazaki*

G84 **853** The effect of reversing seeing of initial and final locations of shortly presented high speed contracting and dilating objects *Sergey Artemenkov*

G85 **854** Visual and Auditory Processing of Distance and the Time-To-Collision of an Approaching Object *Jing-Jiang Yan, Liu Zhou, Chao-Xiang Xie, Jennifer Campos, Hong-Jin Sun*

G86 **855** Closer is better: Distance, independent of spatial frequency, influences circularvection *Laura Trutoiu, John J. Rieser, Douglas Morse*

## Navigation

Author Presents: 4:00 - 5:45 pm

G87 **856** Guidance of Walking in Cluttered Environments: Effect of Distant Obstacles on Route Selection *Martin Gérin-Lajoie, William H. Warren*

G88 **857** Avoiding moving obstacles on foot: Can people learn to anticipate obstacle motion? *Justin Owens, William Warren*

G89 **858** Wormholes in Virtual Reality: What spatial knowledge is learned for navigation? *Benjamin Schnapp, William Warren*

G90 **859** Influence of landmarks on path integration *Xiaoang Irene Wan, Ranxiao Frances Wang, James Crowell*

G91 **860** Metric vs. Ordinal Place Structure in Active Navigation *Huiying Zhong, Marianne C. Harrison, William H. Warren*

G92 **861** Separating the Two Main Components of Active Navigation for Learning a Virtual Environment: Decision-Making and Control *Jonathan Bakdash, Sally Linkenauger, Dennis Proffitt*

G93 **862** Navigation Strategies Utilized by Sight Altered Individuals *Jayne Fry, James Nolan*

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## Talk Sessions, Tuesday, May 15

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### TALK SESSION

Tuesday, May 15, 8:30 - 10:00 am,  
Hyatt Ballroom South

### Shape, Picture, & Scene Perception

Moderator: Diane Beck

8:30 **863** Memory for objects in virtual environments *Tom Troscianko, Nick Mourkoussis, Fiona Rivera, Katerina Mania, Tim Dixon, Rycharde Hawkes*

8:45 **864** There is no symmetry like orthogonal symmetry *Matthias Treder, Peter van der Helm*

9:00 **865** Decoding distributed patterns of activity associated with natural scene categorization *Eamon Caddigan, Dirk Walther, Justas Birgolas, Jonathan Weissman, Diane Beck, Fei-Fei Li*

9:15 **866** Photorealistic Rendering: How Realistic Is It? *Hany Farid, Mary Bravo*

9:30 **867** Different roles of the parahippocampal place area (PPA) and retrosplenial cortex (RSC) in scene perception *Soojin Park, Marvin M Chun*

9:45 **868** Framing Aesthetics: Effects of Spatial Composition *Stephen Palmer, Jonathan Gardner*

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### TALK SESSION

Tuesday, May 15, 8:30 - 10:00 am,  
Hyatt Ballroom North

### Blindness, Amblyopia, Dyslexia, and Rehabilitation

Moderator: David Jones

8:30 **869** Beyond BOLD: Expanding the Role of fMRI in Low Vision Rehabilitation *Christopher B Glielmi, Xiaoping P Hu, Ronald A Schuchard*

8:45 **870** Responses to auditory motion within visual motion area MT+ in early blind and sight recovery subjects *Melissa Saenz, Lindsay B. Lewis, Alex G. Huth, Ione Fine, Christof Koch*

9:00 **871** Molecular Correlates of Amblyopia and Visual Recovery *Brett Beston, Kathryn Murphy, David Jones*

9:15 **872** High-density verps show distinct mechanisms for global form and motion processing in adults and infants *Oliver Braddick, John Wattam-Bell, Deirdre Birtles, Janette Atkinson, Claes von Hofsten, Pär Nyström*

9:30 **873** Deficits in External Noise Exclusion Underlie the Etiology of Dyslexia *Anne Sperling, Zhong-Lin Lu, Franklin Manis, Mark Seidenberg*

9:45 **874** Three new visual methods for generating phantom sensations: case studies in the relief of upper and lower phantom limb pain, and benign essential tremors *David Peterzell, Roberta Cone, Christian Carter, Judy Epler-Ortega, Alexandra Harmell, Deborah Velez, Kathleen Parkes, Vilayanur Ramachandran, John McQuaid*

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### TALK SESSION

Tuesday, May 15, 10:30 am - 12:15 pm,  
Hyatt Ballroom South

### Attention to Locations and Features

Moderator: Marisa Carrasco

10:30 **875** Feature-based attention modulates orientation-selective responses in human visual cortex *Taosheng Liu, Jonas Larsson, Marisa Carrasco*

10:45 **876** Mechanisms of Covert Attention: External Noise Exclusion and Stimulus Enhancement in Early Visual Areas *Zhong-Lin Lu, Xiangrui Li, Bosco S. Tjan, Barbara A. Doshier, Wilson Chu*

11:00 **877** Sustained spatial attention in the human lateral geniculate nucleus and superior colliculus *Keith Schneider, Sabine Kastner*

11:15 **878** Impaired attentional selectivity following lesions to human pulvinar *Jacqueline Snow, Harriet Allen, Robert Rafal, Glyn Humphreys*

11:30 **879** Prism adaptation reduces the 'disengage deficit' in right brain damage patients *Christopher Striemer, James Danckert*

11:45 **880** Attentional suppression spreads throughout the visual field *Zoltán Vidnyánszky, Viktor Gál, István Kóbor, Lajos Kozák, John Serences*

12:00 **881** Attentional load modulates subconscious orientation processing. *Bahador Bahrami, David Carmel, Vincent Walsh, Geraint Rees, Nilli Lavie*

**TALK SESSION**

Tuesday, May 15, 10:30 am - 12:15 pm,  
Hyatt Ballroom North

**Motion Mechanisms**

Moderator: Tony Movshon

10:30 **882** Integration of sensory responses in coarse and fine motion discriminations *Mehrdad Jazayeri, Anthony J. Movshon*

10:45 **883** Image velocity estimation based on vector averaging of MT neuron responses: the problem of spatial scale *John A. Perrone, Richard J. Krauzlis*

11:00 **499** Spatial frequency tuning of motion integration across space and orientation *Shin'ya Nishida, Kaoru Amano, Mark Edwards, David R. Badcock*

11:15 **885** Bistable Illusory Rebound Motion: Event-related functional magnetic resonance imaging of perceptual states and switches *Po-Jang Hsieh, Gideon Caplovitz, Peter Tse*

11:30 **886** A 'Perceptual Scotoma' Theory of Motion-Induced Blindness *Joshua New, Brian Scholl*

11:45 **887** A cortical locus for high-level motion processing? *Julian Wallace, Nicholas Scott-Samuel, Andy Smith*

12:00 **888** Brain activity reflects implied motion in abstract paintings *Chai-Youn Kim, Randolph Blake*

**TALK SESSION**

Tuesday, May 15, 2:00 - 3:30 pm,  
Hyatt Ballroom South

**Perceptual Learning IV**

Moderator: Allison Sekuler

2:00 **889** Electrophysiological correlates of performance and learning in the backward-masked texture-discrimination task *Nitzan Censor, Yoram Bonneh, Dov Sagi*

2:15 **890** Electrophysiological Substrates of Configural Learning *Leslie Blaha, Thomas Busey*

2:30 **891** Superior identification of familiar visual stimuli a year after learning *Zahra Hussain, Patrick Bennett, Allison Sekuler*

2:45 **892** Unsupervised learning of higher order statistics of visual features: evidence for relational encoding *Elan Barenholtz, Michael J. Tarr*

3:00 **893** Beyond pair-wise statistics in visual scene perception *József Fiser, Gergő Orbán, Richard Aslin, Máté Lengyel*

3:15 **894** Culture and visual context learning *Diyu Chen, Yuhong V. Jiang*

**TALK SESSION**

Tuesday, May 15, 2:00 - 3:30 pm,  
Hyatt Ballroom North

**Color, Luminance and Receptors**

Moderator: Andrew Stockman

2:00 **895** Scission causes large color-induction effects in textured center-surround stimuli *Daniel Wollschläger, Barton L. Anderson*

2:15 **896** Cone-specific gain changes compensate color appearance for differences in spectral sensitivity *Deanne Leonard, Michael Webster*

2:30 **897** Bayesian Models of Color Appearance: Understanding the Appearance of Small Spot Colors *David H. Brainard, Heidi Hofer, David R. Williams*

2:45 **898** The achromatic mechanisms do not combine cone signals additively: a new experimental approach. *Rhea T. Eskew, Jr., Jessica Goodrich*

3:00 **899**  $V_{\mu}^*(\lambda)$ : a generalized luminous efficiency function for any condition of chromatic adaptation *Andrew Stockman, Herbert Jägle, Markus Pirzer, Lindsay Sharpe*

3:15 **900** Early scotopic dark adaptation; change in gain versus change in noise. *Adam Reeves, Rebecca Grayhem*

**TALK SESSION**

Tuesday, May 15, 4:00 - 5:45 pm,  
Hyatt Ballroom South

**Attention: Selection Over Space and Time**

Moderator: Arni Kristjánsson

4:00 **901** Temporal dynamics in the expansion and contraction of the attentional window. *Lisa N. Jefferies, Vincent Di Lollo*

4:15 **902** Readout from Iconic Memory Involves Similar Neural Processes as Selective Spatial Attention *Arni Kristjánsson, Christian C. Ruff, Jon Driver*

4:30 **903** Perceptual load modulates the temporal resolution of visual awareness *David Carmel, Pascal Saker, Geraint Rees, Nilli Lavie*

4:45 **904** Pre-trial fMRI Activity Predicts Behavioral Success *Andrew B. Leber, Nicholas B. Turk-Browne, Marvin M. Chun*

5:00 **905** The Attentional Blink affects three aspects of selection: Delay, duration, and suppression. *Edward Vul, Mark Nieuwenstein, Brian Coffey, Nancy Kanwisher*

5:15 **906** Continuous target input overrides the attentional blink in rapid serial visual presentation *Mark Nieuwenstein, Mary Potter*

5:30 **907** The behavioural temporal dynamics during a cueing task with partially valid cues *Steven Shimozaki*

**TALK SESSION**

Tuesday, May 15, 4:00 - 5:45 pm,  
Hyatt Ballroom North

**Binocular Vision: Rivalry and Mechanisms**

Moderator: Paul Schrater

4:00 **908** Binocular fusion can make two eyes worse than one. *Stuart Anstis, Brian Rogers*

4:15 **909** Perceptual memory of ambiguous figures survives spontaneous perceptual alternations *Jan Brascamp, Tomas Knapen, Ryota Kanai, Raymond van Ee, Albert van den Berg*

4:30 **910** A Perceptual Inference Model for Bistability *Rashmi Sundareswara, Paul R. Schrater*

- 4:45 **911** Similarity in orientation triggers the unseen to be seen during dichoptic suppression *Mark L.T. Vergeer, Rob Van Lier*
- 5:00 **912** Action Can Influence Dynamics of Binocular Rivalry *Kazushi Maruya, Eunice Yang, Randolph Blake*
- 5:15 **913** Stereopsis at isoluminance *Martin Banks, Bjorn Vlas-kamp, James Hillis, Jonathan Gardner*
- 5:30 **914** The role of extraretinal signals in egocentric depth estimation *Gunnar Blohm, Aarlenne Z. Khan, Kai M. Schreiber, Lei Ren, J. Douglas Crawford*

- H16 **930** Surface orientation by indeterminacy: when stereoscopic surfaces with different simulated orientation appear similar *Carlo Fantoni, Walter Gerbino*
- H17 **931** Precision of depth judgement from binocular disparity is heritable *Jeremy Wilmer, Benjamin Backus*

### 3D Perception: Shape and Depth

Author Presents: 10:30 am - 12:15 pm

- H18 **932** Perceived eccentricity difference is reflected by shifts in the spatial profiles of human V1 activity *Scott Murray, Fang Fang, Huseyin Boyaci, Daniel Kersten*

- H19 **933** Emmert's law cannot be generated by relative size cues even when these cues contain sufficient information *Rick Cai, Jerry Federspiel, Kerstin Priest, Mike Zenz*

- H20 **934** Reconstruction of 3D symmetrical shapes by using planarity and compactness constraints *Yunfeng Li, Zygmunt Pizlo*

- H21 **935** 3D object completion develops through infants' manual exploration *Kasey C. Soska, Karen E. Adolph, Scott P. Johnson*

- H22 **936** Frames of reference for the light-from-above prior in visual search and shape judgements. *Wendy Adams*

- H23 **937** Aging and the perception of slant from patterns of optical texture *Charles Crabtree, J. Farley Norman*

- H24 **938** Perceived rigidity of rotating specular superellipsoids under natural and not-so-natural illuminations *Katja Doerschner, Daniel J. Kersten*

- H25 **939** Circles as ambiguous figures *Walter Gerbino*

- H26 **940** 3D Shape Perception in Real Stimuli: Combination of Motion and Stereo Information without Cues-to-Flatness *Rajesh Shah, Fulvio Domini*

- H27 **941** Perceptual elasticity in stereokinetic effect *Kenchi Hosokawa, Yutaka Nakajima, Takao Sato*

- H28 **942** Shape Perception is Merely Ambiguous, Not Systematically Distorted *Young-lim Lee, Mats Lind, Geoffrey P. Bingham*

- H29 **943** Feature correspondence versus motion energy in 3-D shape perception *Xin Meng, Qasim Zaidi*

- H30 **944** Infants' Interpretation of Possible and Impossible Objects in Pictures *Sarah Shuwairi, Judy DeLoache, Scott Johnson*

- H31 **945** Is focal blur an absolute cue to depth? *Dhanraj Vishwanath*

- H32 **946** Age-related differences in the ground dominance effect and perceptual organization of 3-D scenes *Zheng Bian, George Andersen*

- H33 **947** Napoleon Paper Building Blocks *Keh-Ming Lu, Alan S Tsauro, Mei-Fan Chen*

- H34 **948** Size judgments of looming targets: Effect of speed, location and the utilization of eye movements. *Raiju Babu, Susan Leat, Elizabeth Irving*

### Visual Memory

Author Presents: 8:30 - 10:15 am

- H35 **949** Interactions Between Number and Resolution in Visual Working Memory *Brian Barton, Edward Awth*

## Poster Sessions, Tuesday, May 15

### POSTER SESSION H

Tuesday, May 15, 8:30 - 1:00 pm,  
Municipal Auditorium

### Binocular Vision: Stereopsis and Fusion

Author Presents: 10:30 am - 12:15 pm

- H1 **915** A Multi-scale Model of Binocular Combination *Sean Lee, Allan Dobbins*

- H2 **916** Perceived Direction of Motion and Depth of Missing Fundamental Gratings *Jin Qian, Harold Bedell*

- H3 **917** Binocular depth discrimination and estimation beyond interaction space *Robert Allison, Barbara Gillam, Elia Vecellio*

- H4 **918** Binocular orientation perception: the oblique effect occurs after binocular fusion *Tobias Borra*

- H5 **919** Opposite Directions of Motion Enhance the Perception of Stereoscopic Depth *James Dannemiller, Bogdan Iliescu*

- H6 **920** Horizontal disparity gradient with vertical disparity in different depth planes *Céline Devisme, Björn Drobe, Annie Monet, Guillaume Giraret, Jacques Droulez*

- H7 **921** Relative Depth from Pattern Disparities and From Component Disparities *Bart Farell, Yu-Chin Chai*

- H8 **922** Biases in relative depth perception linked to configuration in the scene *Julie M Harris, Paul B Hibbard, Joanna Brooks, Alasdair Anderson*

- H9 **923** Perceptual Distortions in Stereoscopic Photographs *Robert Held, Martin Banks*

- H10 **924** Disparity Scaling in the Presence of Accommodation-Vergence Conflict *David M. Hoffman, Martin S. Banks*

- H11 **925** Temporal property of contrast sensitivity for human stereopsis *Tasuku Ikemiyagi, Takao Sato*

- H12 **926** Disparity averaging mechanisms *Simone Li, Brad Motter*

- H13 **927** Disparity Statistics at Point of Gaze in 3D Natural Scenes *Yang Liu, Lawrence K. Cormack, Alan C. Bovik*

- H14 **928** Effect of wavelength on the nonius horopter *Jayasree Seshadri, Vasudevan Lakshminarayanan, Erwin Wong, Jerry Cristensen*

- H15 **929** Anisotropy and individual differences in depth perception based on binocular disparity and motion parallax *Yasuaki Tamada, Masayuki Sato, Sachio Nakamizo, Michiaki Kondo*

H36 **950** Dissociated Pattern of Neural Correlates for Verbal and Non-Verbal Coding Strategies in Visual Working Memory  
*Mark W. Greenlee, Christoph Rothmayr, Oliver Baumann, Roland M. Rutschmann, Tor Endestad, Svein Magnussen*

H37 **951** Does visual short term memory vary as a function of visual field location  
*Leila Montaser-Kouhsari, Marisa Carrasco*

H38 **952** Object complexity does not reduce the number of representations that can be maintained in visual working memory  
*Veronica Perez, Edward Awh, Edward K. Vogel*

H39 **953** Binding deficit in visual short-term memory reflects maintenance, not retrieval  
*Jun Saiki, Hirofumi Miyatsuji*

H40 **954** Repetition priming of appearance knowledge  
*Robyn T Oliver, J. Stephen Higgins, Amy Baek, Sharon L. Thompson-Schill*

H41 **955** Is Visual Working Memory Consolidation a Continuous or Discrete Process?  
*Weiwei Zhang, Steven Luck*

H42 **956** Orientation-invariant perceptual memory  
*Yasuto Tanaka*

H43 **957** Sleep affects adaptation  
*Bhavin Sheth, Murtuza Khan*

H44 **958** Comparing the benefits of a nap, caffeine, modafinil and placebo on visual, visuospatial, motor and declarative memory.  
*Sara Mednick, Jen Kanady, Kathy Resovsky, Sean Drummond*

H45 **959** The role of short-term implicit memory in probability coding and associative learning  
*Paolo Martini, Vera Maljkovic*

H46 **960** Effects of saccadic eye movements on visual memory for natural objects  
*Gesche M. Huebner, Barbara Gohlke, Karl R. Gegenfurtner*

H47 **961** Visual chunking allows efficient allocation of memory capacity  
*Andrew McCollough, Edward Vogel*

H48 **962** Task-irrelevant attributes influence explicit and implicit memory for faces  
*Chris Oriet, Pauline Pearson, Mitchell Jeffrey*

### Auditory-Visual Interactions

Author Presents: 8:30 - 10:15 am

H49 **963** Perceiving material properties of objects through sight or sound activates ventral occipitotemporal cortex  
*Stephen Arnott, Jon Cant, Melvyn Goodale*

H50 **964** Auditory projections to visual cortex: synaptic basis for multisensory processing in 'unimodal' visual neurons.  
*Helen Ruth Clemo, Giriraj Sharma, Brian Allman, Alex Meredith*

H51 **965** Dynamics of Crossmodal Interactions Between Corresponding Auditory and Visual Features  
*Karla Evans, Anne Treisman*

H52 **966** Auditory noise can facilitate low-level visual processing  
*Jocelyn Faubert, Eoa-Maria Hahler, Rafael Doti, Eduardo Lugo*

H53 **967** Audiovisual Interactions in the Cat: Direct Cortical Projections from the Posterior Auditory Field to Primary Visual Cortex  
*Amee J Hall, Jeffrey G Mellott, Stephen G Lomber*

H54 **968** Cross-modal auditory and visual interactions and aftereffects – A comprehensive study  
*Anshul Jain, Sharon Sally, Thomas Papathomas*

H55 **969** Detecting Correlations between Auditory and Visual Signals  
*Pei-Yi Ko, Carmel Levitan, Martin Banks*

H56 **970** How audio and visual cues combine to discriminate tempo of swing groove drumming  
*Scott Love, James M. Hillis, Carl Waadeland, Davide Rocchesso, Federico Avanzini, Sofia Dahl, Frank E. Pollick*

H57 **971** Audio-Visual Synchrony in an Apparent-Motion Discrimination Task  
*David McCormick, Pascal Mamassian*

H58 **972** Visual-auditory motor remapping within and between the hemispheres: A state-of-the-art theoretical overview of visuomotor functioning across-domains  
*Simon M. McCrea, Ph.D.*

H59 **973** 'Unimodal' visual cortical neurons are influenced by auditory inputs.  
*Alex Meredith, Brian Allman*

H60 **974** Audiovisual Congruence and the Processing of Synchrony in Swing Groove Drumming  
*Melanie Russell, Karin Petrini, Phil McAleer, Davide Rocchesso, Sofia Dahl, Carl Haakon Waadeland, Federico Avanzini, Frank Pollick*

H61 **975** Patterns of cross-modal plasticity in the visual cortex of early blind human subjects across a variety of tasks and input modalities  
*Lindsay Lewis, Melissa Saenz, Ione Fine*

H62 **976** Perceived time is dilated by modulation of visual and auditory stimuli  
*Gijs Plomp, Sergei Gepshtein, Cees van Leeuwen*

H63 **977** Specificity of Crossmodal Links in Exogenous Covert Orienting  
*Melissa Batson, Anton Beer, Takeo Watanabe*

H64 **978** Limited cross-modal capacity revealed by selective attention in repetition blindness with sounds  
*Yi-Chuan Chen, Su-Ling Yeh*

### Face Spaces and Adaptation

Author Presents: 10:30 am - 12:15 pm

H65 **979** The Philadelphia Face Perception Battery  
*Amy Thomas, Kathy Lawler, Ingrid Olson, Geoffrey Aguirre*

H66 **980** When stability means flexibility! Familiar faces under permanent adaptation  
*Claus-Christian Carbon*

H67 **981** Face distortion aftereffect activates motion and face sensitive areas: an fMRI study  
*Daniel Kaping, Carmen Morawetz, Juergen Baudewig, Stefan Treue, Michael A. Webster, Peter Dechent*

H68 **982** The contribution of configuration, facial features and low-level properties to the adaptation of facial expression  
*Andrea Butler, Ipek Oruc, Christopher Fox, Jason Barton*

H69 **983** Gender aftereffects in face silhouettes depend on face-specific processes  
*Nicolas Davidenko, Nathaniel Witthoft, Jonathan Winawer*

H70 **984** Transfer of adaptation after-effects between simple visual forms and faces  
*Vaidehi Natu, Kai-Markus Mueller, Fang Jiang, Alice O'Toole*

H71 **985** Saving face: Extracting summary statistics from a set of faces  
*Jason Haberman, David Whitney*

H72 **986** Abstract withdrawn

H73 **987** On Creating Facial Similarity Spaces  
*Alex Holub, Yunshueh Liu, Pietro Perona*

H74 **988** fMRI and behavioral evidence against a "norm-based" face representation  
*Xiong Jiang, Volker Blanz, Maximilian Riesenhuber*

H75 **989** Navigating the boundary of face space: What kind of stimulus is a face? *Jessica Taubert, Darren Burke, Simone Favelle, Elinor McKone*

H76 **990** Human Face Matching Performance is Robust to Task-Irrelevant Image Changes *Danelle Wilbraham, Aleix Martinez, James Christensen, James Todd*

H77 **991** Perceived Facial Attractiveness as a Function of Age and Clinical Vision Diagnosis *James Nolan, Mark Sai Leong Chan*

### Multiple Object Tracking

Author Presents: 8:30 - 10:15 am

H78 **992** The Tracking Trade-off: Sacrificing Time for Smooth Movements of Attention *Hinze Hogendoorn, Thomas A. Carlson, Frans A.J. Verstraten*

H79 **993** How to kill a fly: on the difficulties of tracking a smooth and sometimes saccadic moving target. *Alejandro Lleras, Michael Ambinder*

H80 **994** Attending to Moving vs. Static Stimuli: A Surprising Dissociation in Multiple Object Tracking *Jonathan Flombaum, Brian Scholl*

H81 **995** Multi-object Tracking in a Realistic 3D Environment *Gregory Zelinsky, Mark Neider, Andrei Todor*

H82 **996** Multiple object tracking disrupts feature binding in visual working memory *Daryl Fougny, René Marois*

H83 **997** The attentional tracking system in each hemifield cannot move toward the other hemifield *Boyoung Won, Min-Shik Kim*

H84 **998** Effects of Task Difficulty on Multiple Object Tracking Performance *Katherine Bettencourt, David C. Somers*

H85 **999** Multiple Object Tracking in the Periphery Does Not Show Hemifield Independence *Justin Ericson, Jeff Nyquist, Joe Lap-pin, Adriane E. Seiffert*

H86 **1000** Size differences improve tracking in MOT, but only when the size of targets/nontargets changes as a group *Harry Haladjian, Zenon Pylyshyn*

H87 **1001** Reference frames for covert spatial attention during smooth pursuit tracking of visual targets *Robert Niebergall, Julio C. Martinez-Trujillo*

H88 **1002** Consistency of Eye Movements during Multiple Object Tracking *Arash Fazl, Ennio Mingolla*

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### POSTER SESSION I

Tuesday, May 15, 2:00 - 6:30 pm,  
Municipal Auditorium

### Grouping and Segmentation II

Author Presents: 2:00 - 3:45 pm

I1 **1003** Gradient cut alignment: A cue to ground in figure-ground and depth perception *Tandra Ghose, Stephen Palmer*

I2 **1004** The Mechanism for Contextual Influences on the Configural Cue of Convexity *Elizabeth Salvagio, Jee Hyun Kim, Mary Peterson*

I3 **1005** Studying the neural mechanisms of visual context integration in border ownership assignment *Nan Zhang, Rudiger von der Heydt, Fangtu Qiu*

I4 **1006** A deficit in horizontal interactions causes an imbalance between feedforward and recurrent visual processing, resulting in texture segregation deficits *Myriam Vandenbroucke, H. Steven Scholte, Herman van Engeland, Chantal Kemner, Victor Lamme*

I5 **1007** Contextual modulation of vernier thresholds by chromaticity-based grouping mechanisms *Bilge Sayim, Michael M. Herzog, Gerald Westheimer*

I6 **1008** Spatial-temporal grouping and perceived writing sequence of Chinese characters in the human brain: Comparison of readers and non-readers *Su-Ling Yeh, San-Yuan Lin, Wei-Lun Chou, Der-Yow Chen, Jyh-Hong Chen, Chien-Chung Chen*

I7 **1009** A biologically-plausible model for curvature-based texture segregation *Guy Ben-Yosef, Ohad Ben-Shahar*

I8 **1010** Gestalt and Translucency *Jan Koenderink, Andrea van Doorn, Sylvia Pont, Whitman Richards*

I9 **1011** Search Asymmetries with Emergent Features *Mary Portillo, James Pomerantz*

I10 **1012** Object perception influences contrast discrimination *Serena K. Thompson, Cheryl A. Olman*

I11 **1013** The Effect of Distracters on Enumeration in the Periphery *Ramakrishna Chakravarthi, Patrick Cavanagh*

I12 **1014** Memory for location is influenced by part-based segmentation of space *Mark Holden, Thomas Shipley, Nora Newcombe*

I13 **1015** When features go around the corner in human vision *Thomas U. Otto, Haluk Ogmen, Michael H. Herzog*

I14 **1016** Are Objects Required for Object-Files?  
*Tao Gao, Brian Scholl*

I15 **1017** The Origins of Causal Perception: Evidence from Postdictive Processing in Infancy

*George Newman, Hoon Choi, Karen Wynn, Brian Scholl*

I16 **1018** A specific autistic trait that modulates illusion susceptibility *Paul Dassonville, Elizabeth Walter, Tiana Bochsler*

### Object Perception

Author Presents: 4:00 - 5:45 pm

I17 **1019** Filling-in of a line segment presented on one side of the blind spot *Yukyu Araragi, Hiroyuki Ito, Shoji Sunaga*

I18 **1020** Detection of global shape in radial frequency patterns involves interacting contour shape channels operating independently of local form processes *Jason Bell, David Badcock, Hugh Wilson, Fran Wilkinson*

I19 **1021** Orientation invariance in shape representation *Caroline Blais, Martin Arguin, Ian Marleau*

I20 **1022** Category-dependent variations in visual processing time *Sébastien Crouzet, Simon J. Thorpe, Holle Kirchner*

I21 **1023** The impact of action similarity on visual object identification. *Genevieve Desmarais, Mike Dixon, Eric Roy*

I22 **1024** Some tests of the standard model *Kenneth Hayworth, Xiaomin Yue, Irving Biederman*

- I23 **1025** Exploring visual object representations with similarity-matrix analysis *Nikolaus Kriegeskorte, Marieke Mur, Doug Ruff, Roozbeh Kiani, Jerzy Bodurka, Peter Bandettini*
- I24 **1026** A Cross-Cultural Test of the Independence of the Representation of Generalized-Cone Dimensions *Mark D. Lescroart, Xiaomin Yue, Jules Davidoff, Irving Biederman*
- I25 **1027** Laser disability glare with and without a windscreen *Leon McLin, Laura Barnes, James Dykes, Peter Smith, Brenda Novar, David Kee, Paul Garcia*
- I26 **1028** Estimation of Contrast Origin in Natural Images *Ganesh Padmanabhan, Mark Brady*
- I27 **1029** Removing Non-Accidental Properties Increases the Duration of Object Awareness *Justin D.N. Ruppel, Stephen M. Emrich, Susanne Ferber*
- I28 **1030** Perceptual judgments, psychophysics, and biological data *Alan Stubbs, Constance Stubbs, Lisa Best, Laurence Smith*
- I29 **1031** Dissociation of Egocentric and Object-Centric Processing in Mental Rotation *Wei-Dong Tao, Jing-Jiang Yan, Peng Wang, Liu Zhou, Hong-Jin Sun*
- I30 **1032** The Effects of Visual-Perceptual Variables on Object Naming in Control Subjects *Audrey H. Guthrie, Anna Bacon Moore, Ronald Schuchard*
- I31 **1033** Familiarity vs. novelty principles for preference *Eiko Shimajo, Junghuyn Park, Lauren Lebon, Stephen Schlein, Shinsuke Shimajo*
- I32 **1034** Uncovering the structure of 3-D shape representations in human vision through analyses of eye movement patterns in object recognition *Charles Leek*

### Face Perception: Emotion I

Author Presents: 4:00 - 5:45 pm

- I33 **1035** Familiarity and Emotion Adaptation *Susan Barrett, Alice O'Toole, Leigh Richards*
- I34 **1036** A Negative Compatibility Effect in Priming of Emotional Faces *Jennifer D. Bennett, Alejandro Lleras, Chris Oriet, James T. Enns*
- I35 **1037** Two-element classification images for the discrimination of emotional expression in upright and inverted face *Patrick J. Bennett, Masayoshi Nagai, Motoyasu Honma, Melissa D. Rutherford, Carl M. Gaspar, Diana Carbone, Masako Nara, Hijiri Ishii, Takatsune Kumada, Allison B. Sekuler*
- I36 **1038** Visual Expectation Paradigm and Keypress Identification Compared: Mapping Emotion Category Boundaries *Jenna L. Cheal, M.D. Rutherford*
- I37 **1039** Do facial identity and facial expression processing dissociate in prosopagnosia? *Lucia Garrido, Bradley Duchaine*
- I38 **1040** Attentional modulation of face expression perception *Julia Gomez Cuerva, Jane Raymond*
- I39 **1041** The role of ambiguity in gaze and expression interactions *Reiko Graham, Teal Shalek, Kevin LaBar*
- I40 **1042** Scanning fixations during processing of facial expression versus identity: an exploration of top-down and bottom-up effects. *George Malcolm, Linda Lanyon, Jason Barton*

- I41 **1043** Face Configuration Biases the Perception of Facial Expressions *Aleix Martinez, Don Neth*
- I42 **1044** A dynamic facial expression database *Sylvain Roy, Cynthia Roy, Isabelle Fortin, Catherine Ethier-Majcher, Pascal Belin, Frederic Gosselin*
- I43 **1045** Different views of facial expressions: an image sequence dataset. *Christopher Benton, Andrew Clark, Robbie Cooper, Ian Penton-Voak, Stavri Nikolov*
- I44 **1046** Color and facial expressions *Maiko Yasuda, Shernaaz Webster, Michael Webster*

### Attention: Theoretical and Computational Models

Author Presents: 2:00 - 3:45 pm

- I45 **1047** Interesting objects in natural scenes are more salient *Lior Elazary, Itti Laurent*
- I46 **1048** Attentional modulation of tuning width, preferred features and gains during visual search *Vidhya Navalpakkam, Laurent Itti*
- I47 **1049** Integrating low-level and high-level visual influences on eye movement behavior *Robert Peters, Laurent Itti*
- I48 **1050** Attention based on Information Maximization *Neil Bruce, John Tsotsos*
- I49 **1051** Visual Search with Selective Tuning *Evgueni Simine, Antonio J. Rodriguez-Sanchez, John K. Tsotsos*
- I50 **1052** Parietal Lesion Leading to Hemineglect and Reduced Extrastriate Activity in a Computational Model of Visual Attention *Linda Lanyon, Susan Denham*
- I51 **1053** A decision-theoretic saliency, its biological plausibility and implications for pre-attentive vision *Dashan Gao, Nuno Vasconcelos*
- I52 **1054** Attention and contrast: A model linking single-unit and psychophysical data *Franco Pestilli, Samuel Ling, Marisa Carrasco*
- I53 **1055** A Model of Voluntary and Involuntary Attention *William Prinzmetal*
- I54 **1056** Deriving and Modeling the Functional Architecture of Visual Selective Attention *George Sperling, Ian Scofield, Arvin Hsu*
- I55 **1057** Sparing at a Cost: The Attentional Blink Serves to Enhance Episodic Distinctiveness *Brad Wyble, Howard Bowman, Mary Potter*
- I56 **1058** Abstract withdrawn
- I57 **1059** Evaluating the weighted salience account of eye movements *Benjamin Vincent, Tom Troscianko, Iain Gilchrist*
- I58 **1060** Towards a descriptive theory of value of information in categorization tasks: implications for theories of eye movement and information search *Jonathan D Nelson, Craig McKenzie, Garrison Cottrell, Terrence Sejnowski*

**Spatial Vision: Natural Scenes and Texture**

Author Presents: 2:00 - 3:45 pm

I59 **1061** Efficiency in the discrimination of 1/f textures. *Craig Abbey, Miguel Eckstein*I60 **1062** Discrimination of amplitude spectrum slope of natural scenes during childhood *Dave Ellemberg, Bruce Hansen, Aaron Johnson*I61 **1063** Super-summation with natural scenes – size more than matters *Pinglei Bao, Bosco S Tjan*I62 **1064** Learning Invariant and Variant Components of Time-Varying Natural Images *Bruno Olshausen, Charles Cadieu*I63 **1065** Imposing both local and global image statistics leads to perceptually improved superresolution *Yuanzhen Li, Edward Adelson*I64 **1066** Histogram skewness is useful and easily computed in neural hardware *Lavanya Sharan, Edward Adelson, Isamu Motoyoshi, Shin'ya Nishida*I65 **1067** Center-surround effects in human discrimination of amplitude spectrum slope. *Aaron Johnson, Bruce Hansen, Dave Ellemberg*I66 **1068** Minkowski summation of cues in complex visual discriminations using natural scene stimuli *Michelle To, P. George Lovell, Tom Troscianko, David Tolhurst*I67 **1069** Labeling contours in natural scenes *James Christensen, James Todd*I68 **1070** Saliency of mirror symmetry in natural patterns. *Elias Cohen, Qasim Zaidi*I69 **1071** Evidence for linear summation of information across orientation channels in texture perception. *Nicolaas Prins*I70 **1072** Cross-frequency Interactions Contribute to the Central Performance Drop *Rick Gurnsey, Cindy Potechin*I71 **1073** Distinct neural correlates of texture segmentation and grouping by collinearity in humans *Clara Casco, Gianluca Campana*I72 **1074** Evidence from fMRI for structural non-selectivity in texture segregation *Lars Strother, Sarah Shomstein, Marlene Behrmann*I73 **1075** Interactive effects of size, contrast, intensity and configuration of background objects in evoking disruptive camouflage in cuttlefish *Chuan-Chin Chiao, Charles Chubb, Roger Hanlon*I74 **1076** A New Method for Generating Discriminable Texture Pairs With Identical Autocorrelation Functions *Steven Kies, Charles Chubb***Motion: Apparent Motion and Illusions**

Author Presents: 4:00 - 5:45 pm

I75 **1077** Illusory motion due to causal time filtering *Cornelia Fermuller, Hui Ji*I76 **1078** Aperture Induced Motion: Illusory motion percepts arising from conflicting terminator and component motion signals *Gideon P. Caplovitz, Peter U. Tse*I77 **1079** A new Barbers Pole configuration to study the integration of local motion information *Johannes Zanker, Stefano Targher, Szonya Durant*I78 **1080** Sub-threshold summation of Glass patterns and real motion *Maria Michela Del Viva, Monica Gori*I79 **1081** Graphic invariants for representing motion throughout the history of art *Simone Gori, Riccardo Pedersini, Enrico Giora*I80 **1082** Explaining the Footsteps, Bellydancer, Wenceslas, and Kickback Illusions *Piers Howe, Peter Thompson, Stuart Anstis, Hersh Sagreiya, Margaret Livingstone*I81 **1083** Effects of eccentricity and retinal illuminance on the rotating snakes illusion. *Rumi Hisakata, Ikuya Murakami*I82 **1084** Rotating Ouchi illusion *Akiyoshi Kitaoka, Ikuya Murakami*I83 **1085** A Filehne illusion at equiluminance *Ikuya Murakami*I84 **1086** Measuring the freezing rotation illusion *Max R. Dürsteler*I85 **1087** Competition for perception: Internal models vs retinal transients in perceiving positions of moving objects *Gerrit W Maus, Romi Nijhawan*I86 **1088** Pre-saccadic Changes in Visual Motion Discrimination *Alby Richard, Jan Churan, Daniel Guitton, Christopher Pack*I87 **1089** Neural Correlates of a Saltation Illusion *Harald Stogbauer, Virginie van Wassenhove, Shinsuke Shimojo*I88 **1090** How robust is apparent motion across stimulus change? *Cathleen M Moore, Teresa Stephens*I89 **1091** Apparent Motion for Agents and Non-linear Trajectories *Venkat Lakshminaryanan, Webb Phillips, Justin Junge, Laurie Santos*

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**Talk Sessions, Wednesday, May 16**

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**TALK SESSION**Wednesday, May 16, 8:30 - 10:00 am,  
Hyatt Ballroom South**Face Perception: Emotion II**

Moderator: Jason Barton

8:30 **1092** A new perspective on portraiture *Pietro Perona*8:45 **1093** Facial expressional adaptation aftereffects contingent on racial categories *Robert Shannon, Sheng He*9:00 **1094** High-level after-effects in the recognition of dynamic facial expressions *Cristóbal Curio, Martin Giese, Martin Breidt, Mario Kleiner, Heinrich Bülthoff*9:15 **1095** Looking for emotion in facial expressions: fixation patterns are emotion-specific *Jeffrey Nelson, Steven Franconeri, Joan Chiao*9:30 **1096** The N170 Marks the End of the Process -- Dynamics of Occipito-Temporal Integration of Facial Features Across Spatial Frequency Bands to Categorize Facial Expressions of Emotion *Philippe G. Schyns, Lucy Petro, Marie Smith*9:45 **1097** Asymmetric relationship in representations of facial identity and expression for novel faces within the human visual system *Christopher J Fox, Jason J S Barton*



**TALK SESSION**

Wednesday, May 16, 8:30 - 10:00 am,  
Hyatt Ballroom North

**Eye Movements: Cognitive II**

Moderator: Mary Hayhoe

8:30 **1098** Infants' eye movements during free-viewing as a window into the development of attention *Michael C. Frank, Ed Vul, Scott P. Johnson*

8:45 **1099** Eye Movements During Multiple Object Tracking *Hilda M. Fehd, Adriane E. Seiffert*

9:00 **1100** Control of gaze while walking in a real environment *Jelena Jovancevic-Misic, Brian Sullivan, Kelly Chajka, Mary Hayhoe*

9:15 **1101** Saliency-driven selection is transient and impenetrable to consciousness. *Wieske van Zoest, Mieke Donk*

9:30 **1102** Gaze Control and Perceptual Decisions are Modulated by Learned Expected Reward *Jason Droll, Binh Pham, Craig Abbey, Miguel Eckstein*

9:45 **1103** Predictive transfer of visual adaptation before saccadic eye movements *David Melcher*

**TALK SESSION**

Wednesday, May 16, 10:30 am - 12:15 pm,  
Hyatt Ballroom South

**2D Motion II**

Moderator: Jocelyn Faubert

10:30 **1104** A new gradient approach to the computation of 2D pattern motion *Alan Johnston*

10:45 **1105** Characterizing Changes in Perceived Speed and Speed Discriminability Arising from Motion Adaptation *Alan A Stocker, Eero P Simoncelli*

11:00 **1106** First- and second-order motion processing are separate at low temporal frequencies but common at high temporal frequencies *Remy Allard, Jocelyn Faubert*

11:15 **1107** Adaptation to transparent plaids: two repulsive directions or one? *James Hedges, Eero Simoncelli*

11:30 **1108** Spatial frequency spectra of random dynamic glass patterns predict perceived motion direction *Linda Bowns, Horace Barlow*

11:45 **1109** Distractors enhance target detection during smooth pursuit *Scott Watamaniuk, Stephen Heinen*

12:00 **1110** Induced reappearance of invisible stimuli in motion induced blindness: uncovering interactions across the awareness boundary *Yoram Bonneh, Alexander Cooperman, Dov Sagi*

**TALK SESSION**

Wednesday, May 16, 10:30 am - 12:00 pm,  
Hyatt Ballroom North

**Temporal Processing**

Moderator: Preeti Verghese

10:30 **1111** Testing a multi-resolution clock model for temporal duration discrimination *Michael Morgan, Joshua Solomon*

10:45 **1112** Object Segmentation Cues Influence Perceived Temporal Variation *Anthony D'Antona, Steven Shevell*

11:00 **1113** Evolution of a motion trajectory over time *Preeti Verghese, James Coughlan*

11:15 **1114** Feature-specific Modulation of Gamma Oscillations in Visual Detection *Soo Hyun Park, Sang-Hun Lee*

11:30 **1115** Spatial layout determines metacontrast masking *Michael Herzog, Varinthira Duangudom, Greg Francis*

11:45 **1116** Transcranial magnetic stimulation (TMS) of early visual cortex reveals a window of integration of substantial duration. *Frank Scharnowski, Johannes Rüter, Frouke Hermens, Jacob Jolij, Thomas Kammer, Michael H. Herzog*

**Poster Sessions, Wednesday, May 16****POSTER SESSION J**

Wednesday, May 16, 8:30 - 1:00 pm,  
Municipal Auditorium

**Locomotion II: Walking and Posture**

Author Presents: 8:30 - 10:15 am

J1 **1117** The visual control of walking: do we go with the (optic) flow? *Pearl S. Guterman, Robert S. Allison, Simon K. Rushton*

J2 **1118** Compensation of the effects of eye and head movements during walking and running *Michael von Grünau, Rong Zhou*

J3 **1119** Investigations of Real and Imagined Walking *Benjamin R. Kunz, Sarah H. Creem-Regehr, William B. Thompson*

J4 **1120** Visual control representations in locomotion: stair descent in adults and children *Dorothy Cowie, Janette Atkinson, Oliver Braddick*

J5 **1121** Choosing between competing goals during walking in a virtual environment *Jonathan A. Cohen, William H. Warren*

J6 **1122** Do walkers follow their heads? A test of the gaze-angle strategy for locomotor control *Michael Cinelli, William Warren*

J7 **1123** Optic flow and the maintenance of balance *Brian Rogers, Katherine Young, Shelley Tootell*

J8 **1124** Modulation of visual control of posture by extra-retinal information of eye-movement *Shin'ichi Onimaru, Hiroaki Shigemasa, Michiteru Kitazaki*

J9 **1125** Development of visual control of posture in sensitivity function of motion frequency *Michiteru Kitazaki, Jun'ichi Katayama, Nobuko Komori, Shoji Itakura*

J10 **1126** Progressive lenses distortions effect on postural stability in virtual reality environment *Jean-marie Hanssens, Remy Allard, Jocelyn Faubert*

J11 **1127** Independence of Verbal and Blind-Walking Distance Estimate Errors *Robert Post*

J12 **1128** The Effects of Optical Magnification/Minimization on Distance Estimation by Stationary and Walking Observers *Jennifer Campos, Patricia Freitas, Emma Turner, Michael Wong, Hong-Jin Sun*

## Processing of Objects

Author Presents: 8:30 - 10:15 am

- J13 **1129** Fine-grained analysis of functional selectivity in human occipitotemporal cortex *Chris Baker, Mark Williams, Leila Reddy, Lawrence Wald, Graham Wiggins, Brad Dickerson, Christina Triantafyllou, Nancy Kanwisher*
- J14 **1130** Sensitivity to Object-Centered Relations in LOC *Irving Biederman, Mark Lescoart, Kenneth Hayworth*
- J15 **1131** Precise discrimination of position in object-selective regions of human visual cortex *Elizabeth Louie, David Bressler, David Whitney*
- J16 **1132** Perceptual expertise with cars leads to greater perceptual interference with faces but not objects  
*Thomas McKeeff, Frank Tong, Isabel Gauthier*
- J17 **1133** Rapid object categorization without conscious recognition: aneuropsychological study *Muriel Boucart, Simon Thorpe, Holle Kirschner*
- J18 **1134** fMRI-adaptation for articulated moving objects in ventral temporal brain areas *John Pyles, Javier Garcia, Emily Grossman*
- J19 **1135** Spaced out: good discrimination but poor memory for spacing differences in houses. *Rachel Robbins, Daphne Maurer, Terri Lewis*
- J20 **1136** The role of local feature processing in face and car detection *Hyejean Suh, Kalanit Grill-Spector*
- J21 **1137** Differential processing of salient regions, contours and shape in the human LOC *Joakim Vinberg, Kalanit Grill-Spector*
- J22 **1138** Dynamic shape transformations influence the recognition of animals and objects  
*Quoc C Vuong, Markus Graf*
- J23 **1139** Class information predicts activation by object fragments in human object areas *Yulia Lerner, Boris Epshtein, Shimon Ullman, Rafael Malach*
- J24 **1140** Object-file, a static concept... using dynamic information? *Agnieszka Miskiewicz, Stéphane Buffat, Anne-Lise Paradis, Jean Lorenceau*
- J25 **1141** On the limits of feed-forward processing in visual object recognition *Gabriel Kreiman, Thomas Serre, Tomaso Poggio*
- J26 **1142** It seems to turn away from me: Foreshortened front-back axes bias determination of depth orientation of familiar objects. *Ryosuke Niimi, Kazuhiko Yokosawa*
- J27 **1143** Spatiotemporal averaging along a moving trajectory *R. Dirk Beer, Erin A. Krizay, Donald I. A. MacLeod*

## Scene Perception II

Author Presents: 8:30 - 10:15 am

- J28 **1144** Rapid categorization of Natural or Man-made scene contexts : different effects with amplitude and phase alterations. *Olivier Joubert, Denis Fize, Guillaume Rousselet, Michèle Fabre-Thorpe*
- J29 **1145** Objective Assessment of Improved Visibility with Digital Image Enhancement for the Visually Impaired *Ming Mei, Susan Leat*

- J30 **1146** Position-Invariant fMRI Adaptation Effects in Scene-Selective Regions *Sean MacEvoy, Russell Epstein*
- J31 **1147** Two kinds of fMRI repetition suppression? *Whitney Parker, J. Stephen Higgins, Alana Feiler, Russell Epstein*
- J32 **1148** The map in the brain: Distributed cortical representations of large-scale space *Alana M. Feiler, Russell A. Epstein, Geofrey K. Aguirre*
- J33 **1149** Normative representation of objects and scenes: Evidence from predictable biases in visual perception and memory *Talia Konkle, Aude Oliva*
- J34 **1150** Statistical learning of temporal predictability in scene gist *Timothy F. Brady, Aude Oliva*
- J35 **1151** Is Unlocalized Amplitude Information of Any Use for Scene Gist Recognition? *Lester Loschky, Daniel Simons, Scott Smerchek, Elise Matz, Benjamin Bilyeu, Laura Artman*
- J36 **1152** Spatial judgments are facilitated by layout cues but not by recall cues *Carmela Gottesman*
- J37 **1153** Encoding of different environmental features with or without spatial updating *George S W Chan, Yvonne Chang, Hong-Jin Sun*

## Search II

Author Presents: 8:30 - 10:15 am

- J38 **1154** A measure of relative set size for search in clutter *Mary J Bravo, Hany Farid*
- J39 **1155** Dividing the labor of search: It's not just space anymore *Xin Chen, Gregory Zelinsky*
- J40 **1156** Cutting Through the Clutter: Searching for Targets in Evolving Realistic Scenes *Mark Neider, Samantha Brotzen, Gregory Zelinsky*
- J41 **1157** In What Ways Does Visual Search Benefit From a Spatial Cue? *Shahab Ghorashi, Vincent Di Lollo*
- J42 **1158** Both Identity and Location CAN Be Learned Quickly in Repeated Search *Emily Skow, Mary Peterson*
- J43 **1159** Cross-modal contextual cueing: Auditory and visual association guides spatial attention *Jun Kawahara*
- J44 **1160** Local Spatial Layout Consistency affects Strategies but not Memory during Visual Search. *Melissa Beck, J. Gregory Trafton*
- J45 **1161** In search of the hidden: contextual processing in parietal cortex *Elizabeth Walter, Paul Dassonville*
- J46 **1162** Training and Transfer in Search for Camouflaged Real-World Targets *Walter Boot, Mark Neider, Arthur Kramer*
- J47 **1163** Conceptual grouping effects in visual search: categories matter (and named categories matter more). *Gary Lupyan*
- J48 **1164** Previewing features in visual search: The effects of bottom-up and top-down processing *Kenith Sobel, Matthew Pickard*
- J49 **1165** Using color to guide attention to subsets of stimuli in visual search *Satomi Amster, Allen Nagy*
- J50 **1166** Knowledge about target category: A dissociation between categorization and search *Joshua Hartshorne, Timothy Vickery, Yuhong Jiang*

J51 **1167** The effects of target foreknowledge on visual search performance and strategy *Kelly Steelman, Jason McCarley*

J52 **1168** Visual Search for Emotional Faces is Not Blind to Emotion *Cory Gerritsen, Alexandra Frischen, Daniel Smilek, Adam Blake, John Eastwood*

J53 **1169** The effect of shared parts and spatial configuration on visual search performance in young children *Gina Shroff, Jenna Nelsen, Georgia Reilly, Kelly Dickerson, Peter Gerhardstein*

### Attention: Object-Based Selection

Author Presents: 10:30 am - 12:15 pm

J54 **1170** Size matters in object-based attentional selection *Marco Neppi-Modona, Lars Strother, Sarah Shomstein, Marlene Behrmann*

J55 **1171** Object similarity modulates object-based attention and attentional facilitation in the surround *Dwight Kravitz, Marlene Behrmann*

J56 **1172** Can spatial attention be “shrink-wrapped” to attended objects? *James Hoffman, Matthew Doran, Jason Reiss*

J57 **1173** Object-based attention to holes and wholes *Alice Albrecht, Alexandra List, Lynn Robertson*

J58 **1174** The Role of Object Discontinuity in Object-based Selection *Ashleigh M. Richard, Shaun P. Vecera, Andrew Hollingworth*

J59 **1175** How does attention spread across the surface of an object oriented in depth? *Irene Reppa, Daryl Fougine*

J60 **1176** Effects of bottom-up input and top-down expectation on object-based attention *Ming-Chou Ho, Su-Ling Yeh*

J61 **1177** On the Relationship Between Object-Based and Feature-Based Attention *Bobby Stojanoski, Naseem Al-aidroos, Jay Pratt, Matthias Niemeier*

J62 **1178** Investigating the role of the magnocellular pathway in object- and location-based attention. *Megan C. Boyd, Benjamin A. Guenther, James M. Brown*

J63 **1179** Selection and distribution of attention across the visual field *Alexa B. Roggeveen, Lawrence M. Ward*

### Attentional Capture

Author Presents: 10:30 am - 12:15 pm

J64 **1180** Static items involuntarily capture attention in a dynamic environment. *Yair Pinto, Chris Olivers, Jan Theeuwes*

J65 **1181** Grabbing attention without knowing: Automatic capture of attention by subliminal spatial cues. *Manon Mulckhuyse, Durk Talsma, Jan Theeuwes*

J66 **1182** Temporal properties of task-irrelevant events: attentional capture is not purely bottom-up. *Jeroen Benjamins, Hinze Hogendoorn, Ignace Hooge, Frans Verstraten*

J67 **1183** Identity Change and Oculomotor Capture *Anne Hillstrom, Jason Wong, Matthew Peterson*

J68 **1184** Object action captures attention: A test of the behavioral threat hypothesis *Jeffrey Lin, Steven Franconeri, James Enns*

J69 **1185** Asymmetry of stimulus-driven attentional capture by flash and color distractors *Hsin-I Liao, Su-Ling Yeh*

J70 **1186** Attentional Capture by Incongruent Cues: An Analysis of Individual Difference *Peggy Chen, J. Toby Modrkoff*

J71 **1187** A new object captures attention *Fook K. Chua, Muhammad Khaidir Ismail*

J72 **1188** Driven to less distraction: rTMS of the right parietal cortex reduces attentional capture in visual search by eliminating inter-trial priming. *John Hodsoll, Carmel Mevorach, Glyn Humphreys*

J73 **1189** Motion-induced attentional capture enhances induced gamma-band activity *Kathrin Ohla, Thomas Gruber, Velitchko Manahilov, Matthias M. Müller*

### Attention: Temporal Selection

Author Presents: 10:30 am - 12:15 pm

J74 **1190** Transient attention when detecting pictures in RSVP search *Mary C Potter, Rijuta Pandav, Brad Wyble*

J75 **1191** Working Memory and the AB: Dissociable Effects of Working Memory Maintenance and Scanning Operations. *Stephen Johnston, Kimron Shapiro*

J76 **1192** Concurrent task demands determine whether personal names survive the attentional blink *Barry Giesbrecht*

J77 **1193** Evidence in favor of a Resource Depletion Account of the Attentional Blink *Paul E. Dux, Christopher L. Asplund, René Marois*

J78 **1194** Failure of distractor inhibition in the Attentional Blink *Irina Harris, Paul Dux*

J79 **1195** Investigating an inhibitory account of the Attentional Blink *Daniel Loach, Alexandra Frischen*

J80 **1196** Investigating the Attentional Blink With Predicted Targets *Wah Pheow Tan, Veronica J Dark*

J81 **1197** Inter-trial suppression of selective attention in RSVP streams *Katerina Polychronopoulos, Brian Levinthal, Jun-ichiro Kawahara, Alejandro Lleras*

J82 **1198** Category-based and item-based processes in rejecting distractors in RSVP *Atsunori Ariga, Katsumi Watanabe*

J83 **1199** Cognitive control during shifts of attention and task-set *Yu-Chin Chiu, Steven Yantis*

### Attentional Modulation of Early Vision

Author Presents: 10:30 am - 12:15 pm

J84 **1200** Differential effects of endogenous and exogenous covert attention on texture segmentation *Barbara Montagna, Yaffa Yeshurun, Marisa Carrasco*

J85 **1201** Using foils to measure spatial tuning functions for visual attention *John Palmer, Cathleen M. Moore*

J86 **1202** Foveopetal are easier to detect than foveofugal motions: the effect of attention *Jose Barraza, Andres Martin*

J87 **1203** Feature-based attention: Effects of eccentricity *Sharon L. Sally, Zoltan Vidnyanszky, Thomas Papathomas*

# Topic Index



Below is a list of talk and poster sessions by topic. Parentheses indicate which abstracts are included in each session.

## **2D Motion I**

*Posters* (133-140) Friday, May 11, 5:45 - 8:45 pm

## **2D Motion II**

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