

MODVIS 2024

Computational and Mathematical Models in Vision: A VSS satellite workshop

May 15-17

Blue Heron room, Tradewinds Island Grand Resort
(upstairs from the main lobby - same as last year)

Program

Wednesday May 15

9:00 – 9:30: Badge pickup, coffee and snacks

9:30 – 12:00: Probabilistic Approaches to Vision - Coffee break included

12:00 – 2:00: Lunch on your own

2:00 – 3:30: Constructing perceptual spaces

3:30 – 4:00 Coffee break

4:00 – 5:00 Visual Attention

Thursday May 16

9:00 – 9:30: Badge pickup, coffee and snacks

9:30 – 12:00: Computational Models of Edges & Contours - Coffee break included

11:30 – 12:00: *Business meeting*

12:00 – 2:00: Lunch on your own

2:00 – 4:30: Neural models - Coffee break included

5:30 – 6:30: *Keynote Lecture*

Friday May 17

8:30 – 9:00: Badge pickup, coffee and snacks

9:00 – 11:30 Machine Vision - Coffee break included

Wednesday 9:30 – 12:00: Probabilistic Approaches to Vision

Moderator: Jeff Mulligan

Information Theory Representation of Perceptual Processes

Misha Pavel, *Northeastern University*

Accounting for the structure of noise in binocular rivalry with a Bayesian sampling approach

Stella Qian, Jake Spicer, and Adam N. Sanborn *University of Warwick*

10:30-11:00 am Coffee

Explaining the Staircase Gelb illusion, simultaneous contrast, and perceptual fading of stabilized images with a neural model driven by fixational eye movements

Michael E. Rudd, *University of Nevada, Reno*

Dissecting Bayes: Using influence measures to test normative use of probability density information derived from a sample

Laurence T. Maloney, and Keiji Ota, *New York University*

12:00 - 2:00 pm Lunch

Wednesday 2:00-3:30pm Constructing perceptual spaces

Moderator: Marianne Maertens

Characterization of perceptual spaces from triadic similarity judgments

Jonathan Victor, *Cornell University*

The Robustness of Metric Perceptual Representations Derived From Ordinal Comparisons

David-Elias Künstle, and Felix A. Wichmann, *University of Tübingen*

A Foveated Model Of Visual Discrimination Based On Windowed Texture Statistics

Jan W. Kurzawski, *New York University*; William F. Broderick, *Flatiron Institute, Simons Foundation*; Eero P. Simoncelli, *Flatiron Institute, New York University*; and Jonathan Winawer, *New York University*

3:30-4:00 pm Coffee

Wednesday 4:00-5:00pm Visual Attention

Moderator: Lynn Schmittwilken

A Generative Approach to Understanding Categorical Visual Search

Seoyoung Ahn, *State University of New York at Stony Brook*; Hossein Adeli, *Columbia University*; and Gregory Zelinsky, *State University of New York at Stony Brook*

Feature Integration and Spatial Localization for Attention across the Visual Hierarchy

Joyce Tam, *The Pennsylvania State University*; Chloe Callahan-Flintoft, *US Army Combat Capabilities Development Command (DEVCOM) Army Research Laboratory*; and Brad Wyble, *The Pennsylvania State University*

Thursday 9:30 - 12:00 Computational Models of Edges & Contours

Moderator: Akihito Maruya

Do mechanisms of sinusoidal contrast sensitivity account for edge sensitivity?

Lynn Schmittwilken, *Technische Universität Berlin*; Felix A. Wichmann, *Universität Tübingen*; and Marianne Maertens, *Technische Universität Berlin*

Local geometry of elementary visual computations

Peter Neri, *Ecole Normale Supérieure de Paris*

10:00-10:30 Coffee

Normalization with Dynamic Weights Predicts Neural and Behavioral Effects of Orientation Adaptation

Huseyin Boyaci, *Bilkent University*

11:30 – 12:00 Business meeting

12:00 - 2:00 pm Lunch

Thursday 2:00 – 4:30 Neural models

Moderator: Jonathan Victor

Facilitation in Pattern Motion Perception of Self-operated Stimuli Explained by Adaptive Contrast Normalization

Silvio P. Sabatini, *University of Genoa*; Francesca Peveri, *University of Genoa*; Andrea Canessa, *University of Genoa*; Giulia Sedda, *University of Cagliari*; Vittorio Sanguineti, *University of Genoa*; and Fulvio Missoni, *University of Genoa*

Modeling the Projection Geometry of the Retinotopic Visual Hierarchy

Christopher W. Tyler, *Smith-Kettlewell Institute*

3:00-3:30 Coffee break

Perceptual Grouping with Latent Noise

Ben Lonnqvist, Zhengqing Wu, and Michael H. Herzog, *Swiss Federal Institute of Technology, Lausanne*

Anisotropy in non-rigidity perception: The role of anisotropies in neural populations

Akihito Maruya and Qasim Zaidi, *SUNY Graduate Center for Vision Research*

5:00-5:30 Coffee break

Thursday 5:30 – 6:30 Keynote Lecture

Moderator: Zygmunt Pizlo

Neuronal basis of object segmentation in macaque visual cortex

Anitha Pasupathy, *University of Washington*

Friday 9:00 – 11:30 Machine Vision

Moderator: Qasim Zaidi

Fusing Classic Motion Energy Models and Deep Learning for Coarse-to-fine Moving Object Segmentation

Matthias Tangemann; Matthias Kümmerer, and Matthias Bethge, *University of Tübingen*

Extreme Image Transformations Improve Latent Representations in Machines

Girik Malik and **Ennio Mingolla**, *Northeastern University*

10:00-10:30 Coffee break

Using vision models to bias deep networks

Erhardt Barth, *Universität zu Lübeck*

Euclidean Coordinates are the Wrong Prior for Models of Primate Vision

Garrison W. Cottrell, *University of California, San Diego*