MODVIS 2018: Computational and Mathematical Models in Vision

Wednesday May 16

Eye movements and image motion 9:00-12:25

Cortical interactions 2:30-5:30

Thursday May 17

Three-dimensional objects 9:00-12:50

Brightness, Lightness & Transparency 2:30-4:10

4:10 Business Meeting followed by coffee get-together

Keynote Speech 5:00-6:00

Friday May 18

Signals, Statistics, Channels 8:30-11:30

Horizons Room, Tradewinds Resort, St Petersburg, FL.

Coffee, bagels, muffins, fruits will be available each morning 30 minutes before the first talk

Wednesday May 16

Eye movements and image motion 9:00-12:25 (Moderator: Zygmunt Pizlo)

9:00 Jeffrey Mulligan
Discovery of Activities via Statistical Clustering of Fixation Patterns

9:25 Heiko Schütt, Lars Rothkegel, Hans Trukenbrod, Ralf Engbert, Felix Wichmann
Predicting the Fixation Density Over Time

9:50 Matthias Kümmerer, Thomas Wallis, Matthias Bethge
Consistent Saliency Benchmarking: How One Model Can Win on All Metrics

10:15 Coffee break

10:45 Samuel Eckmann, Lukas Klimmasch, Bertram Shi, Jochen Triesch
An Active Efficient Coding Model of the Development of Amblyopia

11:10 Michele Rucci, Jonathan Victor
Modeling Emmetropization in an Incessantly Moving Eye

11:35 Alan Johnston
A Model of 1D and 2D Motion Processing in the Primate Brain

12:00 Siegried Wahl, Selam Habtegiorgis, Christian Jarvers, Katharina Rifai, Heiko Neumann
Model investigation on contribution of feedback in distortion induced motion adaptation

Cortical interactions 2:30-5:30 (Moderator: Yalda Mohsenzadeh)

2:30 Chien-Chung Chen, Yi-Shiuan Lin, Li Lin,
Divisive Inhibition as a Solution to the Correspondence Problem in Perceptual Grouping

2:55 Jesus Malo, Marcelo Bertalmio
Appropriate kernels for Divisive Normalization explained by Wilson-Cowan equations

3:20 Katerina Malakhova
Why Latent Representations in Convolutional Neural Networks Fall Outside Visual Space.

3:45 Coffee break

4:15 Fred Hamker, Francesc Villagrasa, Javier Baladron, Henning Schroll, Julien Vitay
Visual Category learning by means of Basal Ganglia.

4:40 Naoki Kogo, Felix Kern, Thomas Nowotny, Raymond van Ee, Richard van Wezel, Takeshi Aihara
Effect of noise on mutually inhibiting pyramidal cells in visual cortex: foundation of stochasticity in bi-stable perception.

5:05 Kara Emery, Michael Webster
Inferring the neural representation of faces from adaptation aftereffects

Thursday May 17

Three-dimensional objects 9:00-12:50 (Moderator: Anne Sereno)

9:00 Erin Koch, Famya Baig, Qasim Zaidi
Perspective Geometry Explains Perceived 3D Object Poses in Real Scenes and Pictures

9:25 Seha Kim, Johannes Burge
Global Estimation of Signed 3D Surface Tilt from Natural Images

9:50 Vivian Paulun, Filipp Schmidt, Roland Fleming
A Feature-Based Model of Visually Perceiving Deformable Objects

10:15 Krista Ehinger, Wendy Adams, Erich Graf, James Elder,
Use of Local Image Information in Depth Edge Classification by Humans and Neural Networks

10:40 Coffee break

11:10 Guido Maiello, Lina Klein, Vivian Paulun, Katherine Storrs, Roland Fleming
The Road Towards Image-Computable Models of Human Visual Grasp Planning

11:35 Zygmunt Pizlo
The role of symmetry in computational models of 3D vision

12:00 Morteza Rezanejad, John Wilder, Kaleem Siddiqi, Sven Dickinson, Allan Jepson, Dirk Walther
Measuring Symmetry in Real-World Scenes Using Derivatives of the Medial Axis Radius Function

12:25 Benjamin Kunsberg, Steven Zucker
Understanding Qualitative 3D Shape from Texture and Shading

Brightness, Lightness & Transparency 2:30-4:10 (Moderator: Jeff Mulligan)

2:30 Qasim Zaidi, Romain Bachy, Jose-Manuel Alonso
Brightness Perception involves Local Adaptation opposed by Lateral Interaction

2:55 Michael Rudd
Modeling neural computations in LGN and visual cortex that underlie contextual modulation of lightness and darkness magnitudes in simple and complex images

3:20 Minjung Kim, Guillermo Aguilar, Marianne Maertens
Michelson Contrast for Transparency Perception in Scenes with Multiple Luminances

3:45 Marianne Maertens, Minjung Kim, Guillermo Aguilar,
A contrast-based model of achromatic transparency

4:10 Business Meeting followed by coffee get-together

Keynote Speech 5:00-6:00 (Moderator: Qasim Zaidi)
Eero Simoncelli
Elucidating and testing hierarchical visual models using model-optimized synthetic stimuli

Friday May 18

Signals, Statistics, Channels 8:30-11:35 (Moderator: Michael Rudd)

8:30 James Townsend, Yanjun Liu, Brett Jefferson
Tutorial on A Theory-Driven Methodology For Identification of Vital Properties of Elementary Cognitive Processes: Systems Factorial Technology

8:55 Joe Lappin
The Channel Capacity of Visual Awareness

9:20 Sasen Cain, Matthew Cain
Texture Statistics Are Sufficient For Ensemble Perception

9:45 Coffee break

10:15 Fabian Soto
Linking Signal Detection Theory And Encoding Models To Reveal Independent Neural Representations From Neuroimaging Data

10:40 Gabriel Kreiman, Mengmi Zhang
Finding any Waldo: zero-shot invariant and efficient visual search

11:05 Olivier Penacchio, Julie Harris
'Preferred' stimulus of a whole model visual system

End of Workshop