

# MEETING SCHEDULE

## SEVENTEENTH INTERNATIONAL CONFERENCE ON COGNITIVE AND NEURAL SYSTEMS (ICCNS)

June 4 – 7, 2013

### TUESDAY, JUNE 4, 2013

#### Workshop on “Neural Dynamics of Value-Based Decision-Making and Cognitive Planning”

**8:00am – 8:50am**

Registration

**8:50am – 9:00am**

Stephen Grossberg

*(Boston University)*

Conference and Workshop welcome and introduction

#### Workshop Chair: Stephen Grossberg

**9:00am – 9:50am**

Daniel Salzman

*(Columbia University)*

Cognitive signals in the amygdala

**9:50am – 10:00am**

Q&A

**10:00am – 10:50am**

Kevin LaBar

*(Duke University)*

Neural systems for fear generalization

**10:50am – 11:00am**

Q&A

**11:00am – 11:30am**

Coffee Break

**11:30am – 12:20pm**

Joy Hirsch

*(Yale University School of Medicine)*

Neural circuits for conflict resolution: Insights from visual perception

**12:20pm – 12:30pm**

Q&A

**12:30pm – 1:30pm**

Stephen Grossberg

*(Boston University)*

Behavioral economics and neuroeconomics: Cooperation, competition, preference, and decision-making

**1:30pm – 2:45pm**

Lunch

**2:45pm – 3:35pm**

Todd Braver

*(Washington University, St. Louis)*

Flexible neural mechanisms of cognitive control: Influences on reward-based decision-making

**3:35pm – 3:45pm**

Q&A

**3:45pm – 4:35pm**

Barry Richmond

*(National Institutes of Health)*

Roles of prefrontal and temporal cortices in learning and assessing reward values

**4:35pm – 4:45pm**

Q&A

**4:45pm – 5:30pm**

Discussion with all speakers

**WEDNESDAY, JUNE 5, 2013**  
**Invited and Contributed Speakers and Poster Session I**

**8:00am – 8:30am**

Registration

**ATTENTION, LEARNING, AND RECOGNITION**

**Session Chair: David Somers**

**8:30am – 9:15am**

Jan Theeuwes

*(Vrije Universiteit Amsterdam)*

Prior history shapes selection

**9:15am – 10:00am**

Marisa Carrasco

*(New York University)*

Effects of attention on perceptual learning

**10:00am – 10:45am**

Alfonso Carramaza

*(Harvard University)*

The organization of object processing in the visual ventral stream: The role of object domain

**10:45am – 11:15am**

Coffee Break

**11:15am – 12:00pm**

Patrick Cavanagh

*(Université Paris Descartes)*

Common functional architecture for spatial attention and perceived location

**12:00pm – 12:45pm**

Jeremy Wolfe

*(Harvard Medical School and Brigham & Women's Hospital)*

How selective and non-selective pathways contribute to visual search in scenes

**12:45pm – 2:00pm**

Lunch

**PLENARY LECTURE**

**Session Chair: Stephen Grossberg**

**2:00pm – 3:00pm**

Robert Desimone

*(Massachusetts Institute of Technology)*

Prefrontal-visual cortex interactions in attention

**3:00pm – 3:30pm**

Discussion with all invited and plenary speakers

## **AUDITION, SPEECH, AND LANGUAGE**

**Session Chair: Timothy Gardner**

**3:30pm – 3:45pm**

Xing Tian and David Poeppel

*(New York University)*

Internal estimation for speech control

**3:45pm – 4:00pm**

Thomas Hannagan and Jonathan Grainger

*(CNRS and Universite Aix-Marseille)*

Deep learning in baboons: Convolutional networks and word recognition

**4:00pm – 4:15pm**

Alex Frid, Hananel Hazan, and Larry Manevitz

*(University of Haifa)*

Towards classifying human phonemes without encodings via spatiotemporal liquid state machines

## **SENSORY-MOTOR CONTROL**

**Session Chair: Timothy Gardner**

**4:15pm – 4:30pm**

Jeffrey Markowitz, Gregory Guitchounts, and Timothy Gardner

*(Boston University)*

Slow time-scales in songbird neural sequence generation

**4:30pm – 4:45pm**

Annabelle Blangero, Genevieve Price, and Simon Kelly

*(The City College of New York)*

Electrophysiological correlates of spatial representation of relative saccade-target value in humans

**4:45pm – 5:00pm**

Ruxandra Costea, Victor Bucata, and Coreliu Marinov

*(Polytechnic University of Bucharest)*

Circuit theory approach of a subthreshold MOS neural network working as WTA

**5:00pm – 8:00pm**

Coffee Break and Poster Session I

## THURSDAY, JUNE 6, 2013

### Invited and Contributed Speakers and Conference Reception

**8:00am – 8:30am**

Registration

### VISUAL, AUDITORY, AND MULTI-MODAL PROCESSING

**Session Chair: Praveen Pilly**

**8:30am – 9:15am**

Pieter Roelfsema

*(The Netherlands Institute for Neuroscience)*

Neuronal mechanisms for perceptual organization

**9:15am – 10:00am**

James Todd

*(Ohio State University)*

The perception of 3D shape from texture

**10:00am – 10:45am**

Mary Potter

*(Massachusetts Institute of Technology)*

Recognizing briefly presented pictures: Feedforward processing?

**10:45am – 11:15am**

Coffee Break

**11:15am – 12:00pm**

Randi Martin

*(Rice University)*

Memory retrieval and interference during language comprehension: Implications for embedded process and buffer models of working memory

**12:00pm – 12:45pm**

Roberta Klatzky

*(Carnegie Mellon University)*

Intersensory interactions across and within the senses

**12:45pm – 1:15pm**

Discussion of invited talks

**1:15pm – 2:30pm**

Lunch

## VISION AND EYE MOVEMENTS

### Session Chair: Arash Yazdanbakhsh

#### 2:30pm – 2:45pm

Jasmin Léveillé, Emma Myers, and Arash Yazdanbakhsh  
(*Boston University*)

Induced motion in depth with perspective and binocular disparity cues

#### 2:45pm – 3:00pm

Oliver Layton and Arash Yazdanbakhsh  
(*Boston University*)

A neural model of illusory contours and shapes: A multi-scale investigation

#### 3:00pm – 3:15pm

Karthik Srinivasan, Stephen Grossberg, and Arash Yazdanbakhsh  
(*Boston University*)

Binocular fusion and invariant category learning of natural objects due to predictive remapping during scanning of a depthful scene with eye movements

#### 3:15pm – 3:30pm

Hung-Cheng Chang, Stephen Grossberg, and Yongqiang Cao  
(*Boston University*)

Where's Waldo? What-to-where and where-to-what cortical interactions enable brain categorization and search for desired objects in a scene

#### 3:30pm – 3:45pm

Marco Boi, Naghmeh Mostofi, Martina Poletti, Jonathan Victor, and Michele Rucci  
(*Boston University and Weill Cornell Medical College*)

Perceptual consequences of the temporal input modulations resulting from normal eye movements

#### 3:45pm – 4:00pm

Seth König and Elizabeth Buffalo  
(*Georgia Institute of Technology, Emory University, and Yerkes National Primate Research Center*)

Realistic eye movements optimize the predictive power of visual salience models

#### 4:00pm – 4:15pm

Lorena Chanes, Romain Quentin, and Antoni Valero-Cabré  
(*Université Pierre et Marie Curie, Boston University, and Open University of Catalonia*)

Caudal evidence for hemisphere-specific frontal oscillatory mechanisms underlying the modulation of conscious visual perception

#### 4:15pm – 4:30pm

Bo Cloud Cao, Ennio Mingolla, and Arash Yazdanbakhsh  
(*Boston University and Northeastern University*)

A neural model of MSTd area for eye movement compensation

**4:30pm – 4:45pm**

Bo Tang, Siyao Fu, Yufei Tang, and Haibo He  
(*University of Rhode Island*)

Robust multiple objects tracking: Particle filter with ePSO

**4:45pm – 5:00pm**

Amrita Basu, Shantanu Ghosh, Sumantra Dutta Roy, R. Prashanth, Pratip Ghosh, Santu Kundu, Lopamudra Choudhury, Brejesh Lall, and Santanu Chaudhury  
(*Jadavpur University, Indian Institute of Technology, and Massachusetts General Hospital*)

Vanishing point perception electrified

**NEURAL CIRCUITS AND SYSTEMS**

**Session Chair: Arash Yazdanbakhsh**

**5:00pm – 5:15pm**

Emma Myers and Jason Bohland  
(*Boston University*)

A data-driven study of comparative molecular neuroanatomy

**5:15pm – 5:30pm**

Sarah Beul and Claus Hilgetag  
(*Hamburg University and Boston University*)

Relating cytoarchitectonic differentiation and interareal distance to corticocortical connection patterns in the cat brain

**5:30pm – 5:45pm**

Hananel Hazan, Stav Hertz, and Larry Manevitz  
(*University of Haifa*)

Deep learning for one-class classification of cognitive tasks from fMRI data

**5:45pm – 6:00pm**

Chung Kuo Hao and N. Michael Mayer  
(*AIM-HI, National Chung Cheng University*)

Toward dreaming robots

**6:00pm – 9:00pm**

Conference Reception

**FRIDAY, JUNE 7, 2013**  
**Invited and Contributed Speakers and Poster Session II**

**8:00am – 8:30am**

Registration

**SOCIAL COGNITION: FROM BABIES TO ROBOTS**

**Session Chair: Daniel Bullock**

**8:30am – 9:15am**

Asif Ghazanfar

*(Princeton University)*

Evolving and developing communication through coupled oscillations

**9:15am – 10:00am**

Helen Tager-Flusberg

*(Boston University)*

Identifying early neurobiological risk markers for autism spectrum disorder in the first year of life

**10:00am – 10:30am**

Coffee Break

**10:30am – 11:15am**

Andrew Meltzoff

*(University of Washington)*

How to build a baby with social cognition: Accelerating learning by generalizing across self and other

**11:15am – 12:00pm**

Javier Movellan

*(University of California, San Diego)*

Optimal control approaches to the analysis and synthesis of social behavior

**12:00pm – 1:15pm**

Lunch

**PLENARY LECTURE**

**Session Chair: Stephen Grossberg**

**1:15pm – 2:15pm**

Daniel Schacter

*(Harvard University)*

Constructive memory and imagining the future

**2:15pm – 2:45pm**

Q&A

## **COGNITION, PLANNING, AND EMOTION**

**Session Chair: Helen Barbas**

**2:45pm – 3:00pm**

Rachel Wu, Rebecca Nako, and Martin Eimer  
*(University of Rochester and University of London)*  
Rapid guidance of visual search by object categories

**3:00pm – 3:15pm**

Laura Dugue and Rufin VanRullen  
*(Université de Toulouse)*  
The dynamics of attentional sampling during visual search revealed by Fourier analysis of periodic noise interference

**3:15pm – 3:30pm**

Tsung-Ren Huang, Thomas Hazy, Seth Herd, and Randall O'Reilly  
*(University of Colorado Boulder)*  
Assembling old tricks for new tasks: A neural model of instructional learning and control

**3:30pm – 3:45pm**

Yohan John, Daniel Bullock, Basilis Zikopoulos, and Helen Barbas  
*(Boston University)*  
Emotional attention: Circuits linking amygdala, limbic cortices and the thalamic reticular nucleus

**3:45pm – 4:00pm**

M. Medalla, S.-Y. Kim, and H. Barbas  
*(Boston University)*  
Convergence of auditory and cingulate input in frontopolar area 10: Synaptic substrate for complex cognition

**4:00pm – 4:15pm**

Pietro Avanzini, Maddalena Fabbri-Destro, and Giacomo Rizzolatti  
*(Università di Parma and Italian Institute of Technology)*  
Action perception: Top-down effects

**4:15pm – 4:30pm**

Leonid Perlovsky, Nobuo Masataka, and Michel Cabanac  
*(Harvard University and Kyoto University)*  
The cognitive function of music, cognitive dissonance, and human evolution

**4:30pm – 4:45pm**

Andreas Knoblauch, Ursula Körner, and Edgar Körner  
*(Honda Research Institute Europe GmbH)*

A brain-inspired cognitive architecture for self-referential autonomous learning of situation representations

**4:45pm – 5:00pm**

Hiro-Fumi Yanai and Daisuke Senga

*(Ibaraki University)*

Recurrent neural network for “Aha! That’s it!”

**5:00pm – 8:00pm**

Coffee Break and Poster Session II

# POSTER SESSION I: Wednesday, June 5, 2013

All posters will be displayed for the full day

## VISION AND MOVEMENT

#1

Matthieu de Wit, Rich Masters, and John van der Kamp  
(*University of Hong Kong and Vrije Universiteit Amsterdam*)  
(Fake) hands and cup-noodles: Evidence for dorsal system involvement in “offline” perception

#2

Martina Poletti and Michele Rucci  
(*Boston University*)  
Refining oculomotor control models: Accuracy and precision of microsaccades

#3

Claudia Cherici and Michele Rucci  
(*Boston University*)  
Refining oculomotor control models: Generation of fixational saccades

#4

Harald Ruda  
(*Northeastern University*)  
Rectangular cortical magnification

#5

Grant Fiddymont and Arash Yazdanbakhsh  
(*Boston University*)  
Large-scale, anatomically-constrained simulation of the visual hierarchy

#6

Bo Cloud Cao and Arash Yazdanbakhsh  
(*Boston University*)  
MSTd cells and eye movement compensation

#7

Jeremy Wurbs and Arash Yazdanbakhsh  
(*Boston University*)  
The effect of texture element size, density, luminance, and motion coherence on long-range object grouping

#8

Jayanta Dutta and Bonny Banerjee  
(*University of Memphis*)  
Learning complex cell receptive field properties using a generative model

#9

M. Isabel Vanegas, Annabelle Blangero, and Simon Kelly  
(*The City College of New York*)

Direct electrophysiological metrics of visual surround suppression in humans

## **COGNITION, PLANNING, AND EMOTION**

#10

Natalie Steinemann, Clara Moisello, M. Felice Ghilardi, and Simon Kelly  
(*The City College of New York*)

Modulation of ERP components P3 and N2 during intentional visual sequence learning

#11

Sabrina Walter, Christian Keitel, and Matthias Mueller  
(*Leipzig University*)

Divided attention and hemisphere interaction: Perceptual processes across and within visual hemifields

#12

Francesco Marini, Leonardo Chelazzi, Angelo Maravita, and Marty Woldorff  
(*Duke University, University of Milano-Bicocca, and University of Verona*)

Cognitive preparation for potential distraction is a feature-general strategic process

#13

Laura Herman, Jordan Suchow, and George Alvarez  
(*Pine Crest School and Harvard University*)

Frequency-based synesthetic associations between letters and colors

#14

Zhang Yujie, Liu Huining, Asuka Terai, Masanori Nakagawa  
(*Tokyo Institute of Technology*)

Computational model of metaphor generation based on statistical analysis of Chinese corpora

#15

Miguel Garcia-Cabezas and Helen Barbas  
(*Boston University*)

Predominance of excitatory-excitatory interactions between the anterior cingulate and orbitofrontal cortices associated with distinct aspects of emotions

## POSTER SESSION II: Friday, June 7, 2013

All posters will be displayed for the full day

### AUDITION, SPEECH, AND LANGUAGE

#1

Maddalena Fabbri-Destro, Pietro Avanzini, Elisa De Stefani, Alessandro Innocenti, Cristina Campi, and Maurizio Gentilucci  
(RTM (Rete Multidisciplinare Tecnologica), IIT (Istituto Italiano di Tecnologia), and Università di Parma)

Pronouncing a gesture or producing a word: An N400 EEG study

#2

Bonny Banerjee, Andrew Papanicolaou, Shanshan Gao, and Frances Tylavsky  
(University of Memphis and University of Tennessee)

Can audio features serve as marker of autism spectrum disorders?

### SPATIAL MAPPING AND NAVIGATION

#3

Navaneethan Santhanam, Andrew Furman, and Amy Shelton  
(Johns Hopkins University)

The role of distal cues in human spatial navigation

#4

Kathryn Hedrick and Kechen Zhang  
(Johns Hopkins University)

Continuous attractor model for place cells representing a large region

#5

Jia-Min Zhuo, Kevin Guerra, Ali Mohammad, Nicholas T. M. Robinson, Xuan Gu, Mark E. Bucklin, Brian D. Allen, Jacob G. Bernstein, Matthew P. Elam, Kim-lien T. Le, Edward S. Boyden, and Xue Han  
(Boston University and Massachusetts Institute of Technology)

Adult-born neurons are required for online processing of pattern separation

#6

Mark Motter, James High, Tak Ng, Massimiliano Versace, Timothy Barnes, and Florian Raudies  
(NASA Langley Research Center and Boston University)

Neuromorphic solutions for UAS collision avoidance

### LEARNING AND RECOGNITION

#7

Gabriela Andrejková and Jozef Oravec  
(P.J. Šafárik University in Košice)

Renewed SOM model using supervised learning

#8

Christopher Kanan

*(University of California, San Diego)*

Recognizing sights, smells, and sounds using gnostic fields

#9

Bonny Banerjee, Juan Gu, and Jayanta Dutta

*(University of Memphis)*

Assigning uniqueness to generative features for discrimination

#10

Ian Mitchell and Christian Huyck

*(Middlesex University)*

Self organising maps with a point neuron model

## **NEURAL SYSTEMS AND APPLICATIONS**

#11

Spencer Torene, Scott Brincat, Mikhail Panko, Nan Jia, Andres Salazar-Gomez, Venkatesh Saligrama, Earl Miller, Jason Ritt, and Frank Guenther

*(Boston University and Massachusetts Institute of Technology)*

Adaptive decoding of eye movements with simple recurrent artificial neural networks

#12

Mahmud Mavaahebi and Ken Nagasaka

*(Tokyo University of Agriculture and Technology)*

Quantification of information technology's generated services and associative costs by leveraging empirical artificial neural networks / expert systems modeling

#13

Ken Nagasaka and Masato Kobayashi

*(Tokyo University of Agriculture and Technology)*

Artificial neural network applied for development of blackout scheduling system in an emergency situation

#14

Alexander Ovsich

*(Boston College)*

Models of desire, need, and attention