

BRAIN, COMPUTATION AND LEARNING

January 8–12, 2018

Faculty Hall, Indian Institute of Science, Bangalore

Monday 8 January 2018

08:00–08:45 **Registration**

08:45–09:00 **Inauguration and Welcome Address**

P. S. Sastry

Indian Institute of Science, Bangalore

Session 1: Machine Learning I

Chair: Sriram Ganapathy, Indian Institute of Science, Bangalore

9:00–10:00

Maneesh Sahani

University College London

Learning and Using Priors

10:00–11:00

Rajesh Sundaresan

Indian Institute of Science, Bangalore

Learning to Detect an Oddball Target

11:00–11:30

Coffee Break

11:30–12:00

Special event: Announcement of Prof. Christos Papadimitriou as Pratiksha Trust Distinguished Chair Professor at Indian Institute of Science, Bangalore

Anurag Kumar

Director, Indian Institute of Science, Bangalore

Kris Gopalakrishnan

Chairman, Axilor Ventures; Co Founder, Infosys Pratiksha Trust, Bangalore

12:00–13:00

Christos Papadimitriou

Columbia University, New York

A Computer Scientist Thinks about the Brain

13:00–14:30

Lunch Break

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Session 2: Neural Circuits I

Chair: Sriram Ganapathy, Indian Institute of Science, Bangalore

- 14:30–15:30 **Joby Joseph**
University of Hyderabad
GABA: Oscillator, Decorrelator, Regulator
- 15:30–16:00 **Coffee Break**
- 16:00–17:00 **Supratim Ray**
Indian Institute of Science, Bangalore
Gamma Rhythm as a Tool to Investigate Neural Processing
- 17:00–17:30 **Wrap up discussions for the day**

Tuesday 9 January 2018

Session 3: Language and Audition

Chair: Chandra Sekhar Seelamantula, Indian Institute of Science, Bangalore

- 9:00–10:00 **Mark Liberman**
University of Pennsylvania, Philadelphia
Language and the Brain: Learning about Each from the Other
- 10:00–11:00 **Sriram Ganapathy**
Indian Institute of Science, Bangalore
Unsupervised Auditory Representation Learning in Machines and Humans
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Prasanta Kumar Ghosh**
Indian Institute of Science, Bangalore
Seeing Speech
- 12:30–14:00 **Lunch**

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Wednesday 10 January 2018

Session 4: Neuromorphic computation and Biomechanics

Chair: Chetan Singh Thakur, Indian Institute of Science, Bangalore

- 9:00–10:00 **Andre van Schaik**
Western Sydney University, Sydney
DeepSouth: A Neuromorphic Ecosystem
- 10:00–11:00 **Shantanu Chakrabartty**
Washington University St. Louis
Spiking, Bursting, Noise-shaping and Population Dynamics in a
Network of Growth Transform Neurons
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Patrick van der Smagt**
Volkswagen group AI research, Munich
Learning Movement Without Neural Coding
- 12:30–14:00 **Lunch Break**

Wednesday 10 January 2018

Session 5: Brain Networks: Beyond Neurons

Chair: Chetan Singh Thakur, Indian Institute of Science, Bangalore

- 14:00–15:00 **Srinivasa Chakravarthy**
Indian Institute of Technology Madras, Chennai
Modeling Neuro-Glio-Vasular Interactions: Do Cerebral
Vessels Compute?
- 15:00–15:30 **Coffee Break**
- 15:30–18:30 **Demos and Posters**
- 19:00 **BANQUET**

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Thursday 11 January 2018

Session 6: Space-Time Perception

Chair: Sridharan Devarajan, Indian Institute of Science, Bangalore

- 9:00–11:00 **Mayank Mehta**
University of California, Los Angeles
Neural Mechanisms Of Abstract Space-Time Perception
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Mayank Mehta**
University of California, Los Angeles
Neural Mechanisms Of Abstract Space-Time Perception
- 12:30–14:00 **Lunch Break**

Thursday 11 January 2018

Session 7: Neural Circuits II

Chair: Sridharan Devarajan, Indian Institute of Science, Bangalore

- 14:00–15:00 **Sumantra Chattarji**
National Centre for Biological Sciences, Bangalore
Parallel Distributed Processing in the Stressed Brain
- 15:00–16:00 **Aditya Murthy**
Indian Institute of Science, Bangalore
The Planning And Control Of Sequential Movements
- 16:00–16:30 **Coffee Break**
- 16:30–17:30 **Samuel Norman-Haignere**
École Normal Supérieure, Paris
Exploring the Functional Organization and Computational Properties of Human Auditory Cortex

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Friday 12 January 2018

Session 8: Machine Learning II

Chair: Ambedkar Dukkipati, Indian Institute of Science, Bangalore

- 9:00–10:00 **Ravindran Kannan**
Microsoft Research Lab, Bangalore
Discovering Hidden Structure in Data: Sample Complexity in Unsupervised Learning
- 10:00–11:00 **Shalabh Bhatnagar**
Indian Institute of Science, Bangalore
An Incremental Fast Policy Search using a Single Sample Path
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Vasant Honavar**
The Pennsylvania State University, University Park
An Excursion into Network Neuroscience
- 12:30–14:00 **Lunch Break**

Friday 12 January 2018

Session 9: Audition and Attention

Chair: Ambedkar Dukkipati, Indian Institute of Science, Bangalore

- 14:00–15:00 **Jonathan Fritz**
The University of Maryland, College Park
Transformation from Sound to Meaning at Five Levels in the Ferret Auditory System
- 15:00–15:30 **Coffee Break**
- 15:30–16:30 **Shihab Shamma**
The University of Maryland, College Park
Cortical Mechanisms for Auditory Selective Attention and Decision Making
- 16:30–17:30 **Wrap up discussion for the workshop**