

BRAIN, COMPUTATION and LEARNING



Indian Institute of Science, Bangalore

June 24–28, 2019

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June 24–28, 2019

Faculty Hall, Indian Institute of Science, Bangalore

Monday 24 June 2019

- 08:00–08:45 **Registration**
- 08:45–09:00 **Inauguration and Welcome Address**
Rishikesh Narayanan
Indian Institute of Science, Bangalore

Session 1: Multi-Scale Neuroscience

Chair: Supratim Ray, Indian Institute of Science, Bangalore

- 9:00–11:00 **Mayank Mehta**
University of California, Los Angeles
Learning In Neurons, Networks and Organisms
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Vatsala Thirumalai**
National Centre for Biological Sciences, Bangalore
Connecting the Dots: Single Neurons, Populations, and Behavior
- 12:30–14:00 **Lunch Break (Main Guest House)**

Monday 24 June 2019

Session 2: Machine Learning

Chair: Supratim Ray, Indian Institute of Science, Bangalore

- 14:00–15:00 **Maneesh Sahani**
University College of London
Learning to Compute with Distributed Distributional Representations of Uncertainty
- 15:00–15:30 **Coffee Break**
- 15:30–16:30 **Vasant Honavar**
The Pennsylvania State University, University Park
On the Importance of Causal Models in Making Sense of Big Data
- 16:30–17:00 **Wrap up discussions for the day**

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Tuesday 25 June 2019

Session 3: Neuromorphic Computation and Olfaction

Chair: Venkatesh Babu, Indian Institute of Science, Bangalore

- 9:00–10:00 **Baranidharan Raman**
Washington University, St Louis
A Computational Logic for Olfaction
- 10:00–11:00 **Shantanu Chakrabartty**
Washington University, St Louis
Growth Transform Neural Networks: A Scalable Neuromorphic Machine Learning Framework to Address Neuron-to-Network Performance Gap
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Chetan Singh Thakur**
Indian Institute of Science, Bangalore
Low Power Neuromorphic Systems for Edge Computing
- 12:30–14:00 **Lunch Break (Main Guest House)**

Tuesday 25 June 2019

Session 4: Neural Information Encoding

Chair: Venkatesh Babu, Indian Institute of Science, Bangalore

- 14:00–15:00 **Anirvan Nandy**
Yale University School of Medicine, New Haven
Neural Mechanisms of Flexible Information Selection
- 15:00–15:30 **Coffee Break**
- 15:30–16:30 **Stephen David**
Oregon Health & Science University, Portland
Influence of Behavioral State on Coding by Neural Populations in Auditory Cortex
- 16:30–17:00 **Wrap up discussions for the day**

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Wednesday 26 June 2019

Session 5: Deep Learning Systems

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

- 9:00–10:00 **Vineeth Balasubramanian**
Indian Institute of Technology, Hyderabad
Explaining Neural Networks: A Causal Perspective
- 10:00–11:00 **Vinay Namboodiri**
Indian Institute of Technology, Kanpur
Towards Interpreting Vision and Language Based Learning
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **R. Venkatesh Babu**
Indian Institute of Science, Bangalore
Bright and Dark Sides of Deep Learning
- 12:30–14:00 **Lunch Break (Main Guest House)**

Wednesday 26 June 2019

Session 6: Neural Circuits and Plasticity

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

- 14:00–15:00 **Mark van Rossum**
The University of Nottingham
Energy Efficient Synaptic Plasticity
- 15:00–15:30 **Coffee Break**
- 15:30–16:30 **Sachin Deshmukh**
Indian Institute of Science, Bangalore
Space, Complexity, and the Entorhinal-Hippocampal Network
- 16:30–17:00 **Wrap up discussions for the day**

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Thursday 27 June 2019

Session 7: Adaptive Learning Systems

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

- 9:00–10:00 **Julian Jara-Ettinger**
Yale University, New Haven
Computational Principles Underlying Commonsense Psychology
- 10:00–11:00 **S. P. Arun**
Indian Institute of Science, Bangalore
Reading is Enabled by a Compositional Shape Code
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Pulkit Agrawal**
Massachusetts Institute of Technology, Cambridge
Continually Evolving Machines: Learning by Experimenting
- 12:30–13:00 **Wrap up discussions for the day**
- 13:00–14:30 **Lunch Break (Main Guest House)**

Thursday 27 June 2019

Session 8: Poster Session and Demos

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

- 14:30–17:00 **Poster Session and Demos**
Coffee between 15:30–16:00
- 19:00– **BANQUET (Main Guest House)**

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Friday 28 June 2019

Session 9: Manifolds of Learning and Cognition

Chair: Arun Sripati, Indian Institute of Science, Bangalore

- 9:00–10:00 **Srikanth Padmala**
Indian Institute of Science, Bangalore
Interactions between Emotion, Motivation, and Cognition in the Human Brain
- 10:00–11:00 **Kishore Kuchibhotla**
Johns Hopkins University, Baltimore
Dissociation of Task Acquisition from Expression during Learning Reveals Latent Knowledge
- 11:00–11:30 **Coffee Break**
- 11:30–12:30 **Arvind Kumar**
KTH Royal Institute of Technology, Stockholm
Manifolds of Brain Activity and Their Implications for Learning
- 12:30–13:00 **Wrap up discussions for the day**
- 13:00–14:30 **Lunch Break (Main Guest House)**

Friday 28 June 2019

Session 10: Panel Discussion on AI and Neuroscience

Coordinators: S. P. Arun, Indian Institute of Science, Bangalore
Arvind Kumar, KTH Royal Institute of Technology, Stockholm

- 14:30–16:00 **All speakers and participants**
Panel Discussion on AI and Neuroscience
- 16:00–16:30 **Coffee**



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