**Information, Control, and Learning – The Ingredients of Intelligent Behavior**

**September 26-28, 2016**
The Brindell and Milton Gottlieb Auditorium, The Rothberg Family buildings,
Rachel and Selim Benin School of Computer Science and Engineering
Edmond J. Safra Campus, Jerusalem

Organizing committee: Naftali Tishby, Yair Weiss and Israel Nelken

**Monday, September 26, 2016**
9:00-9:10 – **Eilon Vaadia** – Director of ELSC, *The Hebrew University of Jerusalem, Israel* – Opening words

**Session 1: Information & Control - What’s the connection?**

9:10-10:00 – **Naftali Tishby** – *The Hebrew University of Jerusalem, Israel* – The Synergy between Information and Control

10:00-10:45 – **Sanjoy Mitter** – *Massachusetts Institute of Technology, USA* – Information and Entropy Flow in Estimation and Control

10:45-11:15 – **Coffee break**

11:15-12:00 – **Susanne Still** [Video talk?] – *University of Hawaii, USA* – Optimal Information Processing: Dissipation and Irrelevant Information

12:00-12:45 – **Bert Kappen** – *Radboud University, Netherlands and University College London, UK* – Integrating control, inference and learning. Is it what the brain does?

12:45-14:15 – **Lunch**

**Session 2: Sensorimotor Loops and Decision Making**

14:15-15:00 – **Kenji Doya** – *Okinawa Institute of Science and Technology, Japan* – Neural Circuit Mechanisms of Mental Simulation

15:00-15:45 – **Daniel Wolpert** – *University of Cambridge, UK* – Sensorimotor decisions

15:45-16:15 – **Coffee break**
Tuesday, September 27, 2016

Session 3: Cognition and Embodiment

9:00-9:45 – Andrea Cavagna – Institute for Complex System, Italy – Information transfer and behavioral inertia in starling flocks

9:45-10:30 – Shai Shalev-Shwartz – The Hebrew University of Jerusalem & Mobileye, Israel – Deep Reinforcement Learning for Driving Policy

10:30-11:00 – Coffee break

11:00-11:45 – Nihat Ay – Max Planck Institute for Mathematics in the Science, Germany – Mathematical Aspects of Embodied Intelligence

11:45-12:30 – Daniel Polani – University of Hertfordshire, UK – Informational Drivers of Cognition

12:30-14:00 – Lunch

Session 4: Neural coding and representation

14:00-14:45 – Reza Shadmehr – Johns Hopkins University, USA – Encoding of action by the Purkinje cells of the cerebellum

14:45-15:30 – Ron Meir – Technion – Israel Institute of Technology, Israel – Optimal Neural Codes for Estimation and Control

15:30-16:00 – Coffee break

16:00-16:45 – Máté Lengyel – University of Cambridge, UK – Neural variability and sampling-based probabilistic representations in the visual cortex

16:45-17:30 – Tatyana Sharpee – Salk Institute for Biological Studies, USA – How Invariant feature selectivity is achieved in cortex
Wednesday, September 28, 2016

Session 5: Learning to decide and behave

9:00-9:45 – **Alexandre Pouget** – *University of Geneva, Switzerland* – Optimal policies for value-based decision making

9:45-10:30 – **Satinder Singh Baveja** – *University of Michigan, USA* – Rethinking State Action and Reward in Reinforcement Learning

10:30-11:00 – Coffee break

11:00-11:45 – **Shie Mannor** – *Technion – Israel Institute of Technology, Israel* – Regularization and Robustness in Reinforcement Learning

11:45-12:30 – **Takashi Tanaka** – *KTH Royal Institute of Technology, Sweden* – LQG Control with Minimum Directed Information: A Semidefinite Programming Approach

12:30-14:00 – Lunch

Session 6: Predictions, Adaptation and Planning

14:00-14:45 – **Naama Brenner** – *Technion – Israel Institute of Technology, Israel* – Exploratory adaptation in random networks

14:45-15:30 – **Amir Globerson** – *Tel Aviv University, Israel* – Variational Conditional Probabilities

15:30-16:00 – Coffee break

16:00-16:45 – **Israel Nelken** – *The Hebrew University of Jerusalem, Israel* – Information-theoretic bounds and brains: prediction and planning

16:45-17:30 – Discussion & Conclusions