



ABC Robotics Annual Workshop

June 16, 2015

Joyce Goldman Auditorium, Faculty of Health Sciences
Ben-Gurion University of the Negev (BGU)
Beer-Sheva, Israel



מרכז זלוטובסקי למדעי העצב
Zlotowski Center for Neuroscience

Agricultural, Biological and Cognitive Robotics Initiative
Zlotowski Center for Neuroscience
Ben-Gurion University of the Negev

Tuesday, June 16

- 8:30-9:00 Registration, Poster placement and Refreshment
- 9:00-9:15 Opening remarks, Yael Edan, BGU, Israel

Human-in-the-loop Robotics

Chair: **Ilana Nisky**, BGU, Israel

- 09:15-9:45 **David Abbink**, TU Delft, Netherlands
"Haptic Shared Control for physical human-robot interaction"
- 09:45-10:15 **Anthony Jarc**, Intuitive Surgical, USA
"Robotic surgery and sensorimotor control – current research and opportunities"
- 10:15-10:45 **Jose Carmena**, UC Berkeley, USA
"Closed-loop design strategies for neuroprosthetic control"
- 10:45-11:15 Coffee Break

Autonomous Robotics

Chair: **Ronen Brafman**, BGU, Israel

- 11:15-11:45 **Amir Ayali**, TAU, Israel
"Insect-inspired robotics"
- 11:45-12:15 **Avital Bechar**, Volcani Institute, Israel
"Agricultural robots for field operations"
- 12:15-12:45 **Reid Simmons**, CMU, USA
"Robust Autonomy"
- 12:45-13:30 Lunch
- 13:30-14:15 Posters

Dedication of the Karniel Memorial at the Schwartz Movement Analysis & Rehabilitation Laboratory

- 14:30-15:00 Greetings, Joyce Goldman Auditorium
Prof. Rivka Carmi, President of BGU
Prof. Joseph Kost, Dean of BGU's Faculty of Engineering Sciences
Prof. Amos Katz, Dean of BGU's Faculty of Health Sciences

Faculty of Health Sciences, Ruth and Heinz-Horst Deichmann Building for Health Professionals (M8), room 050

- 15:10-15:30 Lab Dedication
Prof. Dan Blumberg, VP & Dean of Research and Development
Rinat Karniel, Family representative
Prof. Itzhak Melzer, Director, Recanati School for Community Health Professions

Lab Tours & Posters

- 15:45-17:15 Lab tours and posters in two rounds
 - Schwartz Movement Analysis & Rehabilitation Laboratory – Itzhak Melzer
 - The Laboratory for Rehabilitation and Motor Control of Walking – Simona Bar-Haim
 - The Cognition, Aging & Rehabilitation – Shelly Levy Tzedek

Festive Dinner

Lawn of Beit HIAS Campus (BGU campus across from the Leonardo Hotel)

- 19:00-20:00 Festive Dinner
- 20:00 **Netta Pulvermacher**, Dean of the Faculty of Dance, Rubin Academy of Dance and Music, Israel
"To Fold the Big Bang"



The Agricultural, Biological, and Cognitive Robotics Center of
Ben-Gurion University of the Negev
(Established based on generous support from the Helmsley Charitable Trust)



The 11th Karniel Computational Motor Control Workshop

June 17-18, 2015

W.A. Minkoff Senate Hall, BGU Marcus Family Campus
Beer-Sheva, Israel



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Zlotowski Center for Neuroscience

Department of Biomedical Engineering
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Wednesday, June 17

- 08:30-08:50 Registration, poster placement and refreshments
- 08:50-09:00 Opening Remarks

Motor physiology

Chair: **Roni Azouz**, BGU, Israel

- 09:00-09:30 **Opher Donchin**, BGU, Israel
"Hierarchies in cerebellar models"
- 09:30-10:00 **Jose Carmena**, UC Berkeley, USA
Keynote Lecture - "Large-Scale Neural Circuit Dynamics During Neuroprosthetic Skill Learning"
- 10:00-10:30 **Benny Hochner**, HUJI, Israel
"The embodied organization of the octopus motor control"
- 10:30-10:40 Discussion
- 10:40-11:20 Coffee

Motor memory

Chair: **Shelly Levy-Tzedek**, BGU, Israel

- 11:20-11:50 **Pablo Celnik**, JHU, USA
"Neurophysiological markers of motor learning"
- 11:50-12:20 **Miriam Reiner**, Technion, Israel
"Memory consolidation of motor sequences"
- 12:20-12:50 **Jean-Jacques Orban De Xivry**, KU Leuven, Belgium
"Reading and manipulating motor memories in the motor cortex"
- 12:50-13:00 Discussion
- 13:00-14:30 Lunch and Posters

Structure of movement

Chair: **Naftali Tishbi**, HUJI, Israel

- 14:30-15:00 **Aldo Faisal**, ICL, United Kingdom
"The structure of natural human motor behavior"
- 15:00-15:30 **Sandro Mussa-Ivaldi**, Northwestern University, USA
"On the formation of inverse kinematic models through the operation of a human-machine interface"

- 15:30-16:00 Prof. Amir Karniel Memorial Young Investigator Lecture **Firas Mawase**, JHU, USA
"The hidden connectivity of the cerebellar-thalamic-cortical network predicts learning and retention of motor memory"
 - 16:00-16:10 Discussion
 - 16:10-16:20 Poster awards
- Sponsors: Intuitive Surgical, AlphaOmega, NBT
- 16:20-17:00 Coffee break and walk to Building 51 Room 15

Motor control

Chair: **Miriam Zacksenhouse**, Technion, Israel

- 17:00-17:30 **Oron Levin**, KU Leuven, Belgium
"Aging and Motor Control: Does inhibition Matter?"
- 17:30-18:00 **Frederic Danion**, CNRS Timone Institute of Neuroscience, France
"Challenging grip force control during object manipulation tasks"
- 18:00-18:30 **Claude Ghez**, Columbia University, USA
"Auditory kinesthetic feedback enhances both accuracy and adaptive control of hand trajectory in reaching"
- 18:30-18:40 Discussion
- 19:00 Dinner

Thursday, June 18

Desert Hike

Makhtesh Ramon (Ramon's crater), Ramon's Visitors center and a hike in the heart of the crater in the trail of mount "Saharonim" and Wadi "Nikarot".

We are grateful for the generous support of our sponsors: the President of BGU, the Dean of Engineering Sciences, the Dean of Health Sciences, Zlotowski center for Neuroscience, ABC Initiative supported by Helmsley Charitable Trust, Intuitive Surgical, Alpha Omega, and NBT.