The 15th

Karniel Computational Motor Control Workshop

Ben-Gurion University of the Negev
Computational motor control is a multidisciplinary research field in which mathematics, engineering, biology, medicine and the cognitive neurosciences play important roles. This workshop brings together world leaders in the field of computational motor control, including Israeli researchers and distinguished guests. The goal is to learn about the current state of the field and to identify the challenges and research directions that will lead to scientific and medical breakthroughs in the next decades.

The workshop is named after Professor Amir Karniel who passed away on June 2nd 2014 at the age of 47. Amir, a leading researcher in the field and head of the biomedical engineering department, was a dear mentor, colleague and teacher. Amir was a man of vision and a pioneer in motor control research in Israel and internationally. He organized this workshop, together with Professor Opher Donchin, from its founding, in June, 2005, until the 10th workshop in June, 2014.

The organizers:

Prof. Opher Donchin – Conference Chair
Dr. Ilana Nisky – Program Chair
Dr. Lior Shmuelof
Orit Cohen-Rothman

Program committee:

Dr. Ilana Nisky, Ben-Gurion University of the Negev
Prof. Opher Donchin, Ben-Gurion University of the Negev
Dr. Lior Shmuelof, Ben-Gurion University of the Negev
Prof. Sandro Mussa-Ivaldi, Northwestern University
Dr. Jason Friedman, Tel-Aviv University
Dr. Mati Joshua, Hebrew University
Dr. Netta Gurari, Northwestern University

Sponsors:

Ben-Gurion University of the Negev – President
Zlotowski Center for Neuroscience
Ben-Gurion University of the Negev – Rector
Ben-Gurion University of the Negev – Faculty of Engineering
Ben-Gurion University of the Negev – Faculty of Health Sciences
Workshop Program

Sunday, March 24

Pre-workshop activities

09:00 – 13:00 Trip to Aleh Negev Rehabilitation Hospital, Simona Bar-Haim

13:00 – 14:00 Lunch (on your own)

14:00 – 16:30 Lab visits

Labs tour will start from Student Center at 14:00

Physiotherapy

- The laboratory for Rehabilitation and Motor Control of Walking, Simona Bar-Haim
- Cognition Aging and Rehabilitation laboratory, Shelly Levy-Tzedek
- Schwartz Movement Analysis & Rehabilitation Laboratory, Itzik Melzer

Biomedical engineering

- Biomedical Robotics Laboratory, Ilana Nisky
- Motor Learning Laboratory, Opher Donchin

Cognition

- Brain and Action Laboratory, Lior Shmuelof

Evening Special Talk

Building 51 Auditorium 15

- 16:30 – 17:00 – Gathering and coffee
- 17:00 – 18:00 – Ofer Blutrich, Professional Climber and Physical Therapist

Kapara Restaurant, Smilansky St., Old city

- 18:30 Festive dinner (speakers, session chairs, and guests by invitation)

(cars will start leaving U-tel parking or campus at 18:10)
Monday, March 25

Minkoff Senate Hall

- 08:20-08:50 Registration, Poster placement and coffee
- 08:50-09:00 Greetings by Opher Donchin, Head of the organizing committee

Session 1 – Motor Learning and Adaptation

Chair: TBD

- 09:00-09:30 Lior Shmuelof, Ben-Gurion University of the Negev, Israel
  “Decomposing Sensorimotor Adaptation: Attentional control and feedback processing mechanisms”

- 09:30-10:00 Frederic Crevecouer, Universite Catholique de Louvain, Belgium
  “Motor learning in a split second: adaptive control of human reaching movements”

- 10:00-10:30 Gelsy Torres-Oviedo, University of Pittsburgh, USA
  “Corrective muscle responses reveal cerebral-independent sensorimotor adaptation”

- 10:30-10:40 Discussion
- 10:40-11:20 Coffee break

Session 2 – Stroke Recovery

Chair: Netta Gurari, Northwestern University, USA, and Sheng Li, University of Texas, USA

- 11:20-11:50 Netta Gurari, Northwestern University, USA
  "Torque Perception in Chronic Hemiparetic Stroke"

- 11:50-12:20 Sheng Li, University of Texas, USA
  "A unifying pathophysiological account for post-stroke spasticity and disordered motor control"

- 12:20-12:50 Sonja Findlater, University of Calgary, Canada
  "Proprioception after stroke: clinical considerations and anatomical insights"

- 12:50-13:00 Discussion
- 13:00-13:30 Lunch
- 13:30-14:30 Posters

Session 3 – Keynote session – Touch Interaction with the World

Chair: TBD

- 14:30 Greetings Prof. Daniel Chamovitz, President of Ben-Gurion University of the Negev, in the presence of the Family of Prof. Karniel

- 14:40-15:10 Keynote Lecture
  Allison Okamura, Stanford University, USA
  "Wearable Haptic Devices: From Fingertips to Full-Body Haptics"

- 15:10-15:40 Helge Ritter, University of Bielefeld, Germany
  "Manual Intelligence: Linking Motor Control, Robotics and AI"
• 15:40-16:10 **Shlomi Haar**, Imperial College London, UK  
  Prof. Amir Karniel Memorial Young Researcher Lecture  
  "Data-driven understanding of motor skill learning in a real-world task"

• 16:10-16:20 Discussion
• 16:20-16:40 Coffee break and posters

**Session 4– Sensory Systems and Motor Control**

Chair: TBD

• 16:40-17:10 **Lars Oddson**, University of Minnesota, USA  
  “Postural Control in the Absence of Vestibular Otolith Gravitational Cues – Opportunities for Rehabilitation and Research”

• 17:10-17:40 **Anna Montagnini**, Institut de Neurosciences de la Timone, France  
  “What drives ocular motion tracking? Role of perceptual, motivational and inferential factors”

• 17:40-17:50 Discussion
• 17:50-18:00 Best poster awards

*Coca Bar*

**19:00 Drinks and light dinner**

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**Tuesday, March 26**

08:30 – 18:00 Hike in the Negev

"A Psalm of David, when he was in the Wilderness of Judah. O God, You are my God, earnestly I seek you; my soul thirsts for you"  (Psalms 63:1-2)

We will go for a trip to the eastern desert of Israel- the 'Judaean Deseret'. This is one of the smallest yet most unique desert regions of the world. The Judaean Wilderness as it is has been known throughout history, lies to the east of Jerusalem and stretching down to the Dead Sea. It is the Biblical wilderness of hills, valleys, natural springs and rugged beauty. In addition to the hike, we will visit the unique cave of Darejat. The cave of Darejat is the place of where last cave-dwelling community in Israel lived and it is also where we will be eating a local traditional lunch.

**Meeting place:** parking behind building 72 at 08:30.

**What to bring:** a back pack, sunscreen, a hat, hiking clothes and shoes, Water bottles, lunch and snacks for the way back will be provided.

(We will be back approximately between 5:30 to 6:00 p.m.)

Eitan (your tour guide)  
  [elninio76@gmail.com](mailto:elninio76@gmail.com) for any question