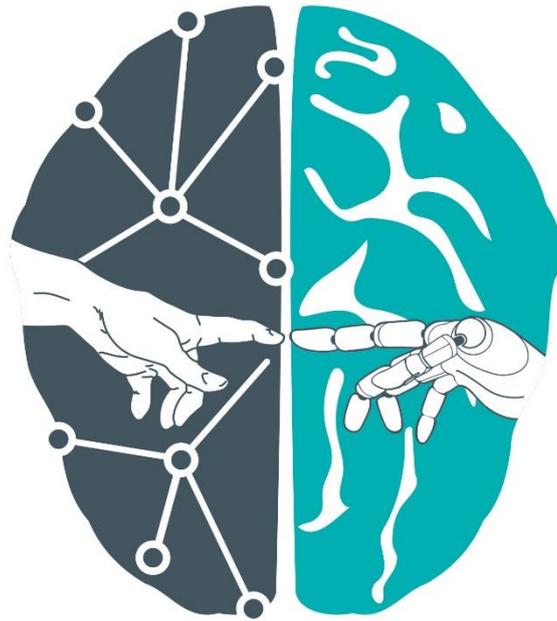


# The 15<sup>th</sup>



# KCMCW

**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

09:30 – 13:00 Visit 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**
- Schwartz Movement Analysis & Rehabilitation Laboratory, **Itzik Melzer**
- Biomechanics and Robotics Laboratory, **Raziel Riemer**

#### Biomedical engineering

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

#### Cognition

- Brain and Action Laboratory, **Lior Shmuelof**

#### Evening Special Talk

*Oren Conference Hall, Building 26*

- 16:30 – 17:00 – Gathering and coffee
- 17:00 – 18:00 – **Ofer Blutrich**, Professional Climber and Physical Therapist  
"Rock Climbing - Learn Or Learn to Fly"

*Kapara Restaurant, Smilansky St., Old city*

- 19:00 **Festive dinner** (*speakers, session chairs, and guests by invitation*)

*(cars will start leaving U-tel parking or campus at 18:30)*

## 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: Jason Friedman, Tel-Aviv University, Israel

- 09:00-09:30 **Lior Shmuelof**, Ben-Gurion University of the Negev, Israel  
“Modularity in sensorimotor adaptation: explicit control, reward processing and the brain”
- 09:30-10:00 **Frédéric Crevecoeur**, Université 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 – Sensorimotor Control and Stroke

Chairs: **Netta Gurari**, Northwestern University, USA and **Firas Mawase**, Technion, Israel

- 11:20-11:50 **Netta Gurari**, Northwestern University, USA  
"Torque Perception in Chronic Hemiparetic Stroke"
- 11:50-12:20 **Firas Mawase**, Technion - Israel Institute of Technology, Israel  
"*Piano-like skill learning for stroke rehabilitation: Task completion vs. Movement quality*"
- 12:20-12:50 **Ronit Feingold-Polak**, Ben-Gurion University of the Negev, Israel "*Reach to grasp following stroke: from research to clinical considerations*"
- 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: **Sigal Berman**, Ben-Gurion University of the Negev, Israel

- 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"

- 15:40-15:45 **Tamar Flash**, Weizmann Institute of Science, Israel  
Words In memory of Amir Karniel
- 15:45-16:15 **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"
- 16:15-16:25 Discussion
- 16:25-16:45 Coffee break and posters

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

Chair: **Mati Joshua**, Hebrew University, Israel

- 16:45-17:15 **Lars Oddson**, University of Minnesota, USA  
“Postural Control in the Absence of Vestibular Otolith Gravitational Cues – Opportunities for Rehabilitation and Research”
- 17:15-17:45 **Anna Montagnini**, Institut de Neurosciences de la Timone, France  
“What drives ocular motion tracking? Role of perceptual, motivational and inferential factors”
- 17:45-17:55 Discussion
- 17:55-18:05 Best poster awards

*Coca Bar*

**19:00 Drinks and light dinner**

#### 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 'Judean Deseret'. This is one of the smallest yet most unique desert regions of the world. The Judean 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