

Our speakers for the upcoming ABC Robotics Seminar on

October 25

to be held on campus

Building 37 (Alon Building for Hi-Tech) room 202, at 10:10

will be:

The roads to walking stability

Yogev Koren, PhD student

Department of Physical Therapy

Judging a socially assistive robot (SAR) by its cover: The effect of SARs' visual qualities on users' perceptions and attitude

Ela Liberman Pincu, PhD student

Department of Industrial Engineering & Management

ABC Robotics Scholars

Abstracts:

The roads to walking stability, Yogev Koren

In visually guided behavior, eye movement is thought to be goal-directed, representing the shift of attention from one area of interest to another. Since stroke survivors tend to gaze down while walking, it would be reasonable to assume that they are paying attention to the walking surface and/or their lower limbs. In healthy humans, downward gazing has been repeatedly observed when individuals are negotiating obstacles and/or when they are required to locate the next foothold/s position. These facts may lead to the conclusion that stroke survivors try to consciously control each step, in an attempt to maintain walking stability. Such control strategy, might be inadequate as it places excessive demands on a limited pool of cognitive resources. However, gaze behavior alone gives no indication as to what information is gathered and what function(s) this information serves. Therefore, it is unclear why stroke survivors tend to gaze down and whether it is 'good' or 'bad' strategy. In this presentation I will present a series of experiments conducted in an attempt to investigate the function(s) served by downward gazing behavior, and its relation to walking stability, as a potential avenue for walking rehabilitation in stroke survivors.

Bio: Yogev Koren is a physical therapist and a PhD student at Ben-Gurion University. Interested mainly in stroke recovery and rehabilitation of walking. As part of this interest, I investigate gaze behavior and its role in the motor-control of walking. This work is conducted at the Laboratory for Rehabilitation and Motor-Control of Walking, at Ben-Gurion University, and the Translational NeuroRehabilitation Laboratory, at Adi-Negev, both are led by Dr. Simona Bar-Haim. Most of my work involves interdisciplinary collaborations, including the Computer Science department, Biomedical Engineering Department and the Industrial Engineering and Management Department.

Judging a socially assistive robot (SAR) by its cover: The effect of SARs' visual qualities on users' perceptions and attitude, Ela Pincu

Human-SAR relationships vary by context of use and interaction level. We argue that context and interaction considerations must be incorporated into the SAR's physical design requirements to align the robotic visual qualities with users' expectations. We propose to consider situational-based and dynamics-based human-SAR relationship models in constructing the requirements. Previous studies contributed to the understanding of users' perceptions and preferences regarding existing commercially available SARs. Yet, very few studies regarding SARs' appearance used designated SAR designs, and even fewer evaluated isolated visual features. In this work, we aim to systematically assess the effect of isolated visual qualities and design manipulations. Our empirical findings link visual qualities with perceptions of SAR characteristics. Together with the relationship models, the outcomes are an exemplar of how to form guidelines for the industrial design processes of new SARs to match user expectations.

Bio: Ela Liberman Pincu is an industrial designer and a doctoral candidate in the field of interaction design and HRI at Ben Gurion University in Israel. She holds a bachelor's degree in industrial design from the Holon Institute of Technology, and a master's degree in industrial design (MID) for medical purposes from the Technion - Israel Institute of Technology.

Her research focuses on evaluating the effect of SARs' visual qualities on human perceptions and attitude using direct and extended interactions.

This work is conducted in the Human Factors track under the supervision of Prof. Tal Oron-Gilad and Prof. Elmer van Grondelle, Industrial Design Engineering, TU Delft, The Netherlands.