

Date: April 28, 2025

Speaker: Ehud Nahum, PhD student, Department of Industrial Engineering & Management

Title: Investigating the proxemics shape: an exploratory human-robot interaction study

Abstract:

Abstract. Social navigation is a challenge for the deployment of robots in populated environments. Proxemics is a crucial aspect that studies how people utilize the physical space around them and position themselves relative to others. In this research, we investigate the proxemic shape of human-robot interaction in an exploratory user study with a mobile teleoperated robot, specifically, how the preferred interaction distance is affected by the participant's body position and the robot's approach direction. In four trials, we used a within-group design with 56 engineering students, two body positions (sitting and standing), and two robot approach directions relative to the human (front/back). Results revealed that the proxemics shape is not affected by the participant's position, but the robot's approach direction affects it. Participants required more distance from the robot when it was approaching them from the front. This outcome drove us to propose a new shape of proxemics with more considerable distances that differ from Hall's traditional circular shape and distance zones.

Bio:

Ehud Nahum is a Ph.D. candidate in the Department of Industrial Engineering and Management at Ben-Gurion University of the Negev, under the mentorship of Prof. Yael Edan and Prof. Tal Oron Gilad. He earned his Bachelor of Design (B.Des.) and Master of Design (M.Des.) in Industrial Design from the Bezalel Academy of Arts and Design, focusing on the technology track. Ehud specialises in human interaction design and works with leading local and international high-tech companies. Throughout the years, Ehud gained his expertise within a company he established.

Ehud's doctoral research explores dynamic proxemics—the spatial relationships between humans and robots when sharing the same environment. His work is conducted as part of the Social Navigation group in the Israeli Innovation Authority consortium and was presented at the International Conference on Social Robotics (ICSR) 2024 in Denmark.