

Speaker: Dr. Polina Kurtser, Postdoctoral Researcher at the Mobile Robots and Olfocation (MRO) Lab at the Centre for Applied Autonomous Sensor Systems, Örebro University, Sweden

Title: Development of novel robotic platforms for mechanical stress induction, and their effects on plant morphology, elements, and metabolism

Abstract:

In this talk initial results of research aiming to design a robotic platform for mechanical stress induction in herbal plants are presented. The changes in plant morphology, metabolite profiles, and element content are evaluated in a series of three empirical experiments, conducted in greenhouse and growing bed conditions, for the case of basil plant growth.

Results show that application of the designed robotic platforms significant change the morphological features, including shortening of overall stem length by up to 40% and inter-node distances by up to 80%, for plants treated with a robotic mechanical stress-induction protocol, compared to control groups. Treated plants showed a significant increase in element absorption, by 20--250% compared to controls, and changes in the metabolite profiles suggested an improvement in plants' nutritional profiles. These results suggest that repetitive, robotic, mechanical stimuli could be potentially beneficial for plants' nutritional and taste properties and could be performed with no human intervention (and therefore labor cost). The changes in morphological aspects of the plant could potentially replace practices involving chemical treatment of the plants, leading to more sustainable crop production.

Bio:

Polina Kurtser is a postdoctoral researcher at the Mobile Robots and Olfocation (MRO) lab at the Centre for Applied Autonomous Sensor Systems, Örebro University, Sweden. She holds a PhD in Industrial Engineering from Ben-Gurion University from 2019. Her research interests include perception, computer vision and task planning algorithms for agricultural robotic and other outdoor perception applications.