



6th IEEE International Conference on Soft Robotics

RoboSoft 2023

WORKSHOP

Soft Robots for Environmental Intelligence

April 3, 2023, 8:30 – 12:30 @ Marina Bay, Singapore - Room Peony 4511

ABSTRACT

Environmental Intelligence brings together synergies between environmental science, advanced sensor research and data science, robotics and Artificial Intelligence, for a better understanding of the environment and for mitigating the effects of climate change.

Environmental Intelligence is a particularly relevant application field for the new trend of soft robotics research, in which robots are envisioned as environmentally responsible, energy-efficient bioinspired machines that can grow, adapt, safely interact, and that can be efficiently integrated in natural ecosystems. With an ecological approach to robot design, innovative fabrication technologies, use of biodegradable materials, distributed architectures for sensing and intelligence, new power sources and energy-harvesting solutions, soft robotics can offer concrete solutions for a deeper analysis of natural processes, for increasing environmental knowledge, and thus for intervening with sustainable strategies to safeguard the environment.

Within this perspective, this workshop aims to present and discuss the role and potentiality that soft robotics can provide to advance Environmental Intelligence.

Researchers from different scientific areas will present the most recent results of studying living beings and their ecosystem, designing sustainable materials and machines, collecting and processing multi-sensory information, and will discuss their role within soft robotics as novel sustainable, environmental high-tech solutions for Environmental Intelligence.

AGENDA

TIME	SPEAKER	TOPIC
08:30 – 08:45	Barbara Mazzolai Mirko Kovac	<i>Introduction to the workshop</i>
08:45 – 09:10	Barbara Mazzolai	<i>Soft and growing robots: from Nature to Nature</i>
09:10 – 09:35	Thomas Speck	<i>Plants movements as model for sustainable soft technologies</i>
09:35 – 10:00	Tobias Kraus	<i>Novel material sensors for environmental soft robots</i>
10:00 – 10:20	<i>Tea Break</i>	
10:20 – 10:45	Nick Rowe	<i>Climbing plants as a model in robotics</i>
10:45 – 11:10	Nicola Pugno	<i>Bionic, Nano, Meta Materials and Mechanics</i>
11:10 – 11:35	Stefano Mintchev	<i>Aerial environmental robotics</i>
11:35 – 12:00	Mirko Kovac	<i>Environmental physical AI</i>
12:00 – 12:30	Barbara Mazzolai Mirko Kovac	<i>Panel discussion</i>

ORGANIZERS

Barbara Mazzolai, Istituto Italiano di Tecnologia

Mirko Kovac, Imperial College London and Empa Material Science Institute

