

## KCIST ONLINE LECTURE SERIES AI@KIT

28 June 2021, 17:30 – 19:00

KIT Center Information · Systems · Technologies

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Intelligence is the  
ability to adapt to  
change

Stephen Hawking



# Living the Change

## Program

**Barbara Mazzolai**

*From imperfect natural organisms to adaptive soft robots*

## PROGRAM



**Professor Barbara Mazzolai** - *Istituto Italiano di Tecnologia (IIT)*

**Title:** *From imperfect natural organisms to adaptive soft robots*

**Abstract:** Nature is adaptive, constantly learning and evolving. In the 3.8 billion years, nature has evolved and selected billions of species with characteristics most suited to their environment to be more likely to survive and to sustain life for generations. Perfection is not nature's goal. Nature focuses on evolution. Therefore, nature experiments, re-combines the existing and adapts according to results. Thus, why are roboticists looking at natural organisms for the robot revolution? By looking at natural organisms' life and evolution strategies, nature can provide engineers with the rules to design novel materials, devices able to adapt to unstructured and even dangerous environments, and develop new manufacturing processes. In this talk, I will present our approach to bioinspiration based on the investigation of plants and soft animals' features, with the double goal to identify and extract the key principles underlying these biological functions and to translate them in a technological solution, and to improve scientific knowledge on the biological system that we take as a model.

**Bio:** Barbara Mazzolai is Associate Director for Robotics and Director of the Bioinspired Soft Robotics Laboratory at the Istituto Italiano di Tecnologia (IIT). From February 2011 to March 2021 she was the Director of the IIT Center for Micro-BioRobotics. She graduated in Biology (with Honours) at the University of Pisa, Italy, and received the Ph.D. in Microsystems Engineering from the University of Rome Tor Vergata. She was Deputy Director for the Supervision and Organization of the IIT Centers Network from July 2012 to 2017. From January to July 2017 she was Visiting Faculty at Aerial Robotics Lab, Department of Aeronautics, of Imperial College of London. She is member of the Scientific Advisory Board of the Max Planck Institute for Intelligent Systems (Tübingen and Stuttgart, Germany) and member of the Advisory Committee of the Cluster on Living Adaptive and Energy-autonomous Materials Systems - livMatS (Freiburg, Germany). In 2020, she has obtained the Italian National Scientific Qualification of Full Professor in Bioengineering. Her research activity is in the field of *bioinspired soft robotics*, combining biology and engineering for advancing technological innovation and scientific knowledge. In particular, she focuses her investigations on plants and invertebrate animals. Pioneer of the field of plant-inspired robotics, she was the Coordinator of the EU FET-Open PLANTOID project and developed the first robot inspired by plants. Currently she coordinates the EU FET-Proactive Projects GrowBot and I-Seed. In May 2021, she has started her European Research Council (ERC) Consolidator Grant "I-Wood, Forest Intelligence: robotic networks inspired by the Wood Wide Web". She has received various awards for her work, including the Marisa Bellisario Award and the Medal of the Italian Senate. She is author and co-author of more than 260 papers appeared in international journals, books, and conference proceedings. In 2019, she published her book "La Natura Geniale" (ed. Longanesi).