香港大學 機械工程系
Department of Mechanical Engineering
THE UNIVERSITY OF HONG KONG

SEMINAR

Soft, Edible, and Transient: A New Material Paradigm for Robotics

Date: March 31, 2026 (Tuesday)
Time: 3:00 p.m.
Venue: Room 7-34 & 7-35
Haking Wong Building
HKU

Speaker: Dr. Bokeon Kwak
Postdoctoral researcher
Laboratory of Intelligent Systems
Department of Mechanical Engineering
Ecole Polytechnique Fédérale de Lausanne (EPFL) Switzerland

Abstract:

Robots are ultimately made of materials with specific properties that meet designers' needs. Rigid materials (e.g., metal, plastic, etc.) are often used to develop robots most seen in the real world, owing to their strength and durability. However, exploring alternatives, such as soft materials or even unconventional materials, such as edible materials, can create a new class of robotic systems beyond the reach of traditional designs. One emerging direction in this space is the development of soft and transient robots. These systems are inherently biodegradable, thereby reducing environmental impact at the end of their lifecycle. When partially or fully fabricated from edible materials, they can also provide nutrition, creating a unique connection between robotics and living systems. Nevertheless, realizing such systems in practical applications requires a comprehensive, full-stack approach to address the significant challenges in soft and transient robotics.

In this seminar, I will discuss the motivation for developing soft, transient robots and explore their potential applications. I will begin by discussing prior work on energy-efficient robotic locomotion and the integration of perception using soft materials. I will then describe how biodegradable and edible materials can be leveraged to create intelligent, transient robotic systems. By expanding the material landscape of robotics, this seminar will prompt us to rethink what robots can be made of and to challenge conventional assumptions about their role.

Biography:

Bokeon Kwak is a postdoctoral researcher at the Laboratory of Intelligent Systems (LIS) at EPFL and is currently working on soft robots and edible robots. He completed both his bachelor and doctoral degrees in mechanical engineering at Ulsan National Institute of Science and Technology (UNIST) in 2015 and 2021, respectively. During his PhD studies, he developed various bioinspired robots to study their locomotion, such as multimodal walking, underactuated rowing and Marangoni propulsion. Bokeon also worked on smart structures integrated with soft sensors and actuators towards improved intelligence of small-scale robots.

ALL INTERESTED ARE WELCOME
For further information, please contact Prof. Mingxin Huang at 3917 7906.