



Dr. Irene Frizza
The University of Tokyo, Japan

Soft Robotics for Humanoids: Adaptive Feet and Joints for Agile Walking

What helps a humanoid robot walk more like a human, not just in shape, but in movement, balance, and adaptability? While many robots use rigid parts and precise control, human walking relies on softness, flexibility, and quick responses to changing conditions. This talk looks at how soft, adaptive parts can improve robot movement. The focus is on soft robotic feet, controlled by air pressure, that adjust their stiffness in real time, and how soft joints can reduce impact and improve stability. These features help robots move more naturally and handle uneven ground better. As robots enter daily life, it becomes important to ask: how can mechanical systems better reflect the adaptability of the human body? And what role could softness play in the future of robot design?



June 27th 2025

16:00-17:00

Hybrid: UT Hongo Campus
Eng. Bld 2 room 31A

[zoom](#)

Irene Frizza received her B.Sc. degree in Electronic Engineering (2016) and M.Sc. in Automation and Robotic Engineering (2019) from the University of Pisa, Italy. From 2020 to 2024, she was a researcher at the Joint Robotics Laboratory (JRL), National Institute of Advanced Industrial Science and Technology (AIST), in Tsukuba, Japan. She received Ph.D. degree from the University of Montpellier (France) in 2023. Currently, she is now a postdoctoral researcher with the Japan Society for the Promotion of Science (JSPS) at the University of Tokyo, Japan. Her research focuses on the design and control of soft robotic feet and joints, with the goal of improving adaptive locomotion in humanoid robots.

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