TECHNICAL COMMITTEE FOR

MODEL-BASED OPTIMIZATION FOR ROBOTICS

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2024-2025 TC Seminar Series

Zoom: https://columbiauniversity.zoom.us/j/91247893326?pwd=L2JWU21aQzc4cU1ZQklEb0QrWGQvdz09

Time: *February 21st, 2025, 9 AM EDT*

Prof. Cosimo Della Santina
TU Delft

Motor intelligence in soft robots and other unconventional robotic systems

Abstract:

Animal motion capabilities remain unmatched despite AI's huge leaps over the past few years. Following this observation, researchers have argued that any solution to the challenge of embodying AI in mechanical systems should not solely focus on the robot's brain and cannot disregard the intelligence in the body. In this talk, I will present examples from my group's research on mechanically intelligent unconventional robotic systems, with a special focus on soft robots. I will present the challenge of controlling these systems and discuss how model-based and data-driven perspectives can synergistically contribute to solving the great challenge of animal-level motion performance in artificial agents.

Biography:

Cosimo Della Santina received the Ph.D. degree (cum laude) in robotics from the University of Pisa, Pisa, Italy, in 2019. He is currently an Associate Professor with TU Delft, Delft, The Netherlands, and a Guest Research Scientist with the German Aerospace Institute (DLR), Munich, Germany. He was a visiting Ph.D. student and a Postdoc with Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, from 2017 to 2019. He was a Senior Postdoc and a Guest Lecturer with the Department of Informatics, Technical University of Munich, in 2020 and 2021, respectively. His research interest is in providing motor intelligence to unconventional robotic systems, especially those involving elastic and soft components. Dr. Della Santina is the Delft AI lab SELF co-director and a VENI laureate. He has been awarded the 2020 Georges Giralt Ph.D. Award, the 2023 IEEE RAS Early Career Award, and an ERC Starting Grant in 2024. In 2025, he co-founded the Swiss-based start-up Embodied AI, the soft robotics company working to bring safe and capable robots among people.