

YEDITEPE UNIVERSITY
Department of Computer Engineering

SEMINAR

August 17, 2026 (Monday)

14:00 – 15:00

<https://meet.google.com/kvv-ieeo-wrd>

**Optimization by Design: Evolutionary Computation for Robotics,
Planning, and Human--Machine Interaction**

Fabio Stroppa, Ph.D.

Evolutionary computation provides a versatile framework for optimizing the design and control of complex engineered systems. Applied to robotic devices, it enables the design of soft growing manipulators and an underactuated hand exoskeleton for rehabilitation under competing structural and functional constraints, with resulting designs validated on physical hardware. The same framework extends to large-scale coordination problems, such as mission planning for teams of unmanned aerial and ground vehicles, where a customized genetic algorithm generates near-optimal, recharge-aware flight plans over thousands of waypoints. A related methodological thread concerns a broader debate in the field: the proliferation of poorly justified, metaphor-based metaheuristics. Work on multimodal optimization addresses this by holding such methods to a rigorous, statistically grounded standard of comparison. Finally, an adjacent line of work on human-machine interaction examines how multimodal feedback training systems improve engagement and performance in rehabilitation and skills training.

Biography

Dr. Fabio Stroppa is an Assistant Professor in the Department of Computer Engineering at Kadir Has University, Istanbul, Türkiye. He received his B.S. (2011) and M.S. (2013) degrees in Computer Science Engineering from the Polytechnic University of Bari, Italy, his Ph.D. (2018) in Perceptual Robotics from Scuola Superiore Sant'Anna, Pisa, and postdoc training (2021) from Stanford University, USA. He is currently the head of EVO Lab and an IEEE Senior Member. His research interests include evolutionary computation, robotic design, motion planning and scheduling, human-machine interaction, haptics, and shared control.