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Adaptive Coordination and Control for Physical Human-Robot Cooperative Tasks

SPEAKER

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ABSTRACT

This talk explores the mechanisms of collaboration and control that enable intuitive and role-adaptive coordination in physical human-robot interaction across varying task demands and environmental conditions. It begins by investigating adaptive interaction strategies that maintain effective coordination across diverse object characteristics during co-manipulation, even as these variations influence the information exchange between the human and the robot. Extending this perspective, the talk then explores how dynamic and cluttered environments impose additional demands on the interaction. Meeting these demands requires not only intuitive coordination but also a richer, bi-directional flow of information to preserve mutual awareness within the human-robot dyad. Building on the emphasis on bi-directional information exchange, the talk ultimately investigates the principles that govern coordinated behavior by analyzing and quantifying the interaction through an information-theoretic perspective.

ABOUT THE SPEAKER

Doğanay Şirintuna received his B.Sc. and M.Sc. degrees in Mechanical Engineering from Koç University, Istanbul, both supported by merit-based scholarships. He graduated with high honors (cum laude) in 2018 and 2020, and was awarded the Academic Excellence Award upon completing his master's studies. He joined the Human-Robot Interfaces and Interaction Laboratory at the Italian Institute of Technology (IIT) as a Research Fellow in 2021. Since November 2022, he has been pursuing his PhD in Advanced and Humanoid Robotics. His research interests include physical human-robot interaction, mobile manipulation, and robot learning.



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