CS PhD Seminar Series

Oct 14th | 14:30-15:30 | Room 214

Finite State Controllers for Partially Observable Problems

Finite State Controllers (FSCs) are versatile and memory-efficient policy parametrizations essential for the control of partially observable systems. They can be optimized effectively in both model-based and model-free settings. However, due to the inherent partial observability, the resulting optimization problem is non-convex and nontrivial to solve. In this project, we will study an approach to optimizing FSCs and analyze its performance in comparison to standard methods for Partially Observable Markov Decision Process (POMDP) optimization that rely on belief-space representations. The resulting methodology will be applied to partially observable problems, drawing inspiration from olfactory navigation.

Speaker: Abdelmalik Benfadhil

Abdelmalik Benfadhil is a first-year PhD student at the University of Genoa. He holds both a Bachelor's and a Master's degree in Operations Research from the University of Science and Technology Houari Boumediene (USTHB) in Algiers. During his Master's, he completed a research internship at the International Centre for Theoretical Physics (ICTP). Currently, his research focuses on optimization in reinforcement learning (RL) at the Machine Learning Genoa (MaLGa) research center.

ActivePaws and Playcuff: Pilot Evaluation of a Non-Immersive Exergame Suite Controlled by a Wearable Device

ActivePaws is a suite of exergames, controlled by Playcuff — a wearable orthosis for upper limb rehabilitation — designed for the detection, classification, and exploitation of a wide range of 3D upper limb gestures. In ActivePaws, specific synchronized forearm movements are required to play the games, thus combining rehabilitation with gamification. Here, we present the results of a pilot study conducted with a group of healthy young participants to gather preliminary feedback about engagement, game design, usability, and movement-based interaction. Results show a high level of enjoyment, engagement, aesthetic appreciation, positive experiences, and minimal frustration. This work is a preliminary step in preparation for a multicenter, exploratory, prospective, case-control, non-profit clinical investigation within the Fit4MedRob project.

Speaker: Marianna Pizzo

Marianna Pizzo is a third-year PhD student in Computer Science at the University of Genoa. She conducts her research within the Perception and Interaction Laboratory under the supervision of Prof. Manuela Chessa and Prof. Fabio Solari. Her research focuses on the design, development, and evaluation of eXtended Reality (XR) applications, particularly in the field of rehabilitation. She is especially interested in creating accessible, user-centered interactive systems that enhance the effectiveness and usability of XR technologies.

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