

Francesco D'Orazio

Curriculum Vitae

Education

2022

PhD, *PhD Program in Automatic Control, Bioengineering and Operations Research*, Sapienza, University of Rome

2020
2022

MSc Degree, *Control Engineering*, Sapienza, University of Rome, *110/110 cum laude* with honour programme

2017
2020

BSc Degree, *Control and Computer Science Engineering*, Sapienza, University of Rome, *110/110 cum laude*

2012
2017

High School Degree, *Liceo Scientifico e Musicale Farnesina, Rome, Italy*

Theses

MSc Thesis

TITLE Rollover Prevention of a Wheel Mobile Manipulator using Control Barrier Functions

ADVISOR Professor Giuseppe Oriolo

BSc Thesis

TITLE Sub-optimal Trajectories for a car-like robot with a limited FOV

ADVISOR Professor Andrea Cristofaro

Projects

- Sept 2022 **Hybrid consensus for multi-agent systems with time-driven jumps**
Study of the leaderless formation problem with a group of unicycles in an hybrid setting. Their evolution is governed by information exchanged by two communication graphs, Flow (Continuous Time) and Jump (Discrete Time).
- Apr 2022 **ESP and ESP+ Control Schemes for a 3R Compliant Robot**
Application of the Elastic Structure Preserving control scheme to a 3R planar robot with elastic transmission. Its aim is to move the robot in an equivalent plane where gravity is not present, with a configuration-depending damping on the link side, but preserving the elastic elements. ESP+ preserves also the scaling of the inertia matrix.
- Mar 2022 **Enforcing Mobile Robot Safety Under Input Constraints**
Derivation of a control law based on Control Barrier Function that ensures safety in the Adaptive Cruise Control Framework under input limitations. The problem is that the controlled vehicle wants to go as fast as possible (up to the speed limit) without colliding with a vehicle in front

Feb 2021 **Optimal Tuning of LQR controller for Quadroter Helicopters using GA and PSO**

Derivation of a controller based on LQR for controlling a UAV linearized around its hovering position. The LQR matrices have been tuned using meta-heuristics (Genetic Algorithm and Particle Swarm Optimization)

Computer Skills

Languages Matlab & Simulink, C, C++, Python, L^AT_EX

OS Windows, Ubuntu

Tools github

Languages

Italian Mother tongue

English Fluent (written and spoken)