Riccione (RN), Italy
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ANDREA DRUDI

Science Curriculum Vitae

Education

Master's Degree in Automation Engineering
2021 - 2024

Alma Mater Studiorum – University of Bologna
Advisor: Prof. Giuseppe Notarstefano
Dissertation: Control architecture for the deployment of data-driven MPC schemes on Jetracer autonomous racecar
Final degree: 110/110 cum laude

Bachelor's Degree in Ingegneria dell'Automazione
2018 - 2021

Alma Mater Studiorum – University of Bologna
Advisor: Prof. Marconi Lorenzo
Dissertation: Progetto di un sistema di controllo per il Ball & Beam
Final degree: 110/110 cum laude

Scientific Certificate
2013 - 2018

Scientific High School 'A. Volta'
School-leaving examination mark: 100/100

Experiences

Curricular Internship
Sep 2023 – Oct 2023

Alma Mater Studiorum – University of Bologna
Activity: Study and comparison of methods of discretization applied to optimal control techniques, and study of the CasADi library to solve non-linear optimal control problems
Number of hours: 88

Research Fellow
May 2024 – Oct 2024

Alma Mater Studiorum – University of Bologna
Title: Design of distributed optimization toolboxes for learning and control
Supervisor: Giuseppe Notarstefano
***Research* activity**: Study and development of a distributed middleware platform allowing different computing units to implement distributed optimization algorithms in a multi-node processing platform for learning, decision and control problems, e.g., for machine learning or robotics fleet management

Projects during University

Distributed training of a Neural Network and formation control algorithm

Exam: Distributed Autonomous Systems M
Description: distributed training of a Neural network for binary classification of images (MNIST dataset) using the Gradient Tracking Algorithm, and implementation of formation control algorithms in ROS2 with collision and obstacle avoidance using barrier functions

Optimal control of a bipedal robot

Exam: Optimal Control M
Description: implementation of an optimal control algorithm to a compass gait model using Newton's method algorithm for tracking a reference trajectory

Modeling and control of a walking robot
Exam: Modeling and Simulation of Mechatronic Systems M
Description: modeling and control of a walking robot (Dribble Robot) and implementation in Simulink and using Simscape Multibody for simulations and comparison

Autonomous sanitiser robot
Exam: Autonomous and Mobile Robotics M
Description: implementation using ROS2 of autonomous navigation and mapping algorithms in unknown environments based on frontier exploration for a mobile robot, and sanification of user-given rooms in a mapped environment

Information Technology Skills

Office Automation	***Office Suite***: intermediate
Application software	***CAD - Assisted Design***: intermediate
Computer programming	***C***: intermediate ***C++***: foundation ***MATLAB***: intermediate ***Python***: intermediate
Systems and networks management	***Network architecture***: foundation ***Operating systems***: foundation