



Simone Orelli

WORK EXPERIENCE

University of Rome "La Sapienza"

City: Latina | **Country:** Italy

[09/2022 – 12/2023]

University Tutor

Tutor for the course of Fondamenti di Automatica I: Teoria dei Sistemi under the supervision of the teacher Mattia Mattioni.

The activity of tutoring, didactic-integrative, consisted in the development of exercises related to the topics of the course. Classes were held during the first semester of the 2022/2023 academic year at the Latina campus of the university "Sapienza" of Rome.

Municipality of Sezze

City: Sezze | **Country:** Italy

[09/2021 – 09/2022]

Universal Civil Service - Volunteer Operator

Volunteer of the National Civil Service engaged in the social services sector for the project Help adults and elderly people

in difficult conditions.

- Assistance of adults or in uncomfortable conditions;
- Assistance at municipal offices for initiatives promoted for social services;
- Assistance for public events to promote and protect the territory;
- Carrying out the tasks of the project, ensuring understanding and achievement of the objectives set;

EDUCATION AND TRAINING

[11/2021 – 07/2025]

M. Sc. in Control Engineering

University of Rome "La Sapienza"

<https://corsidilaurea.uniroma1.it/it/course/33509>

City: Rome | **Country:** Italy | | **Final grade:** 110/110 with honors | **Thesis:** Nonlinear geometric control of partially-coupled underactuated floating vehicles

[09/2016 – 10/2021]

B. Sc. in Information Engineering, Informatics and Statistics

University of Rome "La Sapienza"

<https://corsidilaurea.uniroma1.it/it/course/33498>

City: Latina | **Country:** Italy | | **Final grade:** 110/110 with honors | **Thesis:** Catene di Markov e catene semi-Markoviane

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

SOFTWARE AND TOOLS

Office | Blender | Simulink | CISCO packet tracer

PROGRAMMING LANGUAGES AND FORMATTING

JavaScript | C++ | HTML | PHP | Python | CSS | Matlab | C | VisualBasic | Arduino | Assembly (computer programming) | LaTeX

DATABASE

MySQL-MariaDB | E/R scheme

PERSONAL SKILLS

Problem-Solving attitude | Project planning | Curiosity and continuous learning | Group work

PROJECTS

- [04/2024 – 07/2024] **Control of underactuated robots via input-constrained receding-horizon DDP**
- Co-developed (team of 3) an optimal controller for underactuated robots using Differential Dynamic Programming (DDP) with Levenberg–Marquardt regularisation and MPC-style receding horizon. Validated on pendubot and acrobot, achieving precise tracking under hard torque constraints for highly nonlinear dynamics.
- [01/2024 – 03/2024] **Modeling and simulation of the Mars helicopter "Ingenuity"**
- Collaborating in a team of 4 to realize a detailed Simulink model of the 'Ingenuity' helicopter flying in the Martian atmosphere.
- [10/2023 – 12/2023] **Self-balancing robot on two wheels**
- Worked with other 2 on building from scratch (with a 3d printer) modeling with MATLAB and Simulink and controlling a two-wheeled self-balancing robot in a digital loop with Arduino (using stepper motors, a MPU6050 board, a Kalman filter and a PID controller).
- [12/2023 – 01/2024] **Decentralized control of the charging process of a fleet of electric vehicles**
- Collaborated in a team of 3 to develop both classical and decentralized Model Predictive Control (MPC) strategies for optimal scheduling of a large fleet of plug-in electric vehicles, using a subgradient method for mixed-integer programming.
- [12/2023 – 01/2024] **Control of a video-game race car using a convolutional neural network**
- Designed, trained and tested (with Keras) a convolutional neural network (CNN) to control a race car in a circuit of OpenAI's Car Racing environment.
- [05/2021 – 07/2021] **Web application for delivery leveraging on MySQL DB**
- Developed by a two-person team, this is a PHP and CSS-based web platform for food delivery, featuring a MySQL database with E/R scheme, state diagrams and logic scheme for handling orders from partnered restaurants to customers, managed and delivered by riders with dedicated interfaces for order tracking and management.

[05/2021 – 07/2021] **Web application for shipping**

Team of 2 to implement a PHP-developed web platform for shipping services, utilizing CSS and XML for design and data handling. It features a client-server model with distinct roles for users (clients, couriers, managers, admins), supporting activities like registration, shipment requests, and tracking, alongside role-specific functionalities.

Intranet managing

Team of 2 to build and configure (router, switch and server HTTP, DNS, FTP, SMTP configuration) an intranet in CISCO packet tracer.

Chat client-server

Design and implement a client-server application for a simple chat with C++ and Oracle virtual box (Linux - Ubuntu virtual machines).

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