# SIMONE ORELLI

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## SUMMARY

I am a 27-year-old Control Systems Engineer with a deep background in control theory, robotics, computer science, and software development. I am passionate about mathematics, physics, astrophysics, artificial intelligence, and all fields related to engineering. My experience spans both hardware and software projects, reflecting my curiosity and drive to continuously learn new things. Outside of engineering, I enjoy playing guitar, sports, and chess. I am currently seeking a role where I can apply and further develop my expertise in control systems and related technologies.

## EDUCATION

**M. Eng. equivalent, Control Engineering** — *Nov 2021 - current*
Università degli Studi di Roma "La Sapienza", Rome, Italy — *Average exam grade: 29.13/30*

**B. Eng. equivalent, Information Engineering, Informatics and Statistics** — *Sep 2016 - Oct 2021*
Università degli Studi di Roma "La Sapienza", Latina, Italy — *Final grade:* 110/110 *with honors*

**Technical Institute: Business Information Systems** — *Sep 2011 - Jul 2016*
ISIS Pacifici & De Magistris, Sezze (LT), Italy — *Final grade: 100/100*

## EXPERIENCES

**Autopilot Control Systems Engineer** — *Sept 2024 - May 2025*
Partner of "Sapienza Aerospace Student Association - SASA" for the project "Sapienza Flight Team - SFT". — *University "Sapienza" of Rome - Faculty of Engineering - Rome*

I contributed to the development and design of a geometric tracking controller for the autonomous vertical flight of a VTOL tricopter, providing solutions for stabilization and management of flight transitions.

**Tutoring activity** — *Sept 2022 - Dec 2022*
Tutor for the course of Fondamenti di Automatica I: Teoria dei Sistemi under the supervision of the teacher Mattia Mattioni. — *University "Sapienza" of Rome - Faculty of Engineering - Latina*

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.

**Universal Civil Service** — *Sep 2021 - Sep 2022*
Volunteer Operator — *Municipality of Sezze*

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;

## TECHNICAL SKILLS

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|---|---|
| **Sftware and tools** | Microsoft Office, Simulink, Stateflow, Blender, CISCO packet tracer |
| **Programming languages** | Arduino, Assembly, C, C++, Java, MATLAB, Python (Keras), Visual Basic |
| **Web languages** | CSS, JavaScript, LaTeX, PHP, XHTML, XML |
| **Databases** | E/R scheme, MariaDB, Microsoft SQL, MySQL |

## LANGUAGE SKILLS

**Italian** Native
**English** Intermediate ability - Self evaluation: B2 (Listening, Reading, Speaking, Writing)

## ACADEMIC PROJECTS

Details and media at s_orion10.github.io

**Control of underactuated robots via input-constrained receding-horizon DDP** *Winter - Spring 2023/2024*
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.

**Modeling and simulation of the Mars helicopter "Ingenuity"** *Winter - Spring 2023/2024*
Collaborating in a team of 4 to realize a detailed Simulink model of the 'Ingenuity' helicopter flying in the Martian atmosphere.

**Self-balancing robot on two wheels** *Autumn - Winter 2023*
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).

**Decentralized control of the charging process of a fleet of electric vehicles** *Winter - Spring 2023/2024*
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.

**Control of a video-game race car using a convolutional neural network** *Winter 2023*
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.

**Graduation thesis** *Summer - Autumn 2021*
Thesis developed with professor and researcher Costantino Ricciuti on Markovian and Semi-Markovian Stochastic Processes.

**Web application for delivery leveraging on MySQL DB** *Spring - Summer 2021*
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.

**Web application for shipping** *Spring - Summer 2021*
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** *Spring 2020*
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** *Autumn-Winter 2019-2020*
Design and implement a client-server application for a simple chat with C++ and Oracle virtual box (Linux - Ubuntu virtual machines).