Patrick Pastorelli

Gender: Male **Date of birth:** 10/07/2001 **Place of birth:** Nice, France **Nationality:** Italian

ABOUT MYSELF

Master degree in computer science with specialization in robotics and IoT at the university of Trento. Interested in competitive programming and participated in the SWERC 2022/2023 as member of the first team of the university of Genova where I obtained my bachelor degree.

Master degree mark: 110 / 110 cum laude

GitHub: KubriksCodeTN

EDUCATION & TRAINING

[01/09/2023 - 01/12/2025]

Master's degree in computer science

University of Trento https://unitn.it

City: Trento | **Country:** Italy | **Field(s) of study:** Information and Communication Technologies | **Final grade:** 110 cum laude | **Level in EQF:** 7 | **Thesis:** Exploring a Flooding-Based Wake-Up Radio Routing Protocol on a New Ultra-Low Power SoC for the IoT

- Specialization in IoT and robotics systems
- HW and protocols for wireless communications
- Development of firmware and drivers for battery less, low power intermittent computing and robotics systems
- Scientific paper writing within the fields of robotics and low-power IoT applications

This period saw the publication of two papers: one in the field of robotics and one in IoT. A collaboration with CovisionLab was carried out to develop a fast image compression pipeline in CUDA and an internship in PCB designing in Altium Designer

[01/09/2020 - 01/07/2023]

Bachelor's degree in computer science

University of Genova https://unige.it

City: Genova | **Country:** Italy | **Field(s) of study:** Information and Communication Technologies | **Final grade:** 110 cum laude | **Level in EQF:** 6 | **Thesis:** Sorted containers: da Python a C++

- Knowledge of computer science and its infrastructures
- Team working and team leading
- Software engineering in both agile and safety critical contexts
- Competitive programming, member of the first team during SWERC 2022/2023

[01/09/2015 - 01/07/2020]

High school diploma

Scientific high school Vieusseux https://www.liceoimperia.edu.it/

City: Imperia | **Country:** Italy | **Final grade:** 93 | **Level in EQF:** 5

Besides obtaining my diploma, I also carried out PCTO in pharmacy and participated in multiple debating competitions organized by Società Nazionale Debate Italia, as a member of the Vieusseux high school team (IM, Italy). Member of the winning team of the deabting competition Fiera del libro di Imperia 2019.

[01/11/2023 - 01/01/2024]

Image compression pipeline in CUDA with CovisionLab

CovisionLab https://www.covisionlab.com/

Development and analysis of a high-speed image compression pipeline for AI models using CUDA. The project also included an evaluation of CUDA Optical Flow.

[01/09/2020 - 01/07/2023]

JUMP, Job-University Matching Project

RUI foundation https://www.fondazionerui.it/it/

JUMP is a 3-year, 120-hour interdisciplinary course open to students from all faculties and offered by Fondazione RUI. It enables the development of transferable skills across three main areas: soft skills, modern themes, and interdisciplinary courses.

[01/02/2019 - 01/11/2019]

Cambride English: First (FCE - C1 level)

Cambridge University https://www.cam.ac.uk/

Final grade: 182, Grade A, C1 level

PUBLICATIONS

[2025]

Fast Shortest Path Polyline Smoothing With G1 Continuity and Bounded Curvature

Reference: P. Pastorelli, S. Dagnino, E. Saccon, M. Frego and L. Palopoli, "Fast Shortest Path Polyline Smoothing With G1 Continuity and Bounded Curvature" IEEE Robotics and Automation Letters, vol. 10, no. 4, pp. 3182-3189, April 2025

In this work, we propose the Dubins Path Smoothing (DPS) algorithm, a novel and efficient method for smoothing polylines in motion planning tasks. DPS applies to motion planning of vehicles with bounded curvature. In the letter, we show that the generated path: 1) has minimal length, 2) is G1 continuous, and 3) is collision-free by construction, under mild hypotheses. We compare our solution with the state-of-the-art and show its convenience both in terms of computation time and of length of the compute path.

Also presented at IRIM 2024 and IROS 2025

Authors: Patrick Pastorelli, Simone Dagnino, Enrico Saccon, Marco Frego, Luigi Palopoli | **Volume, Issue and Pages:** Volume: 10, Issue: 4, April 2025 | **Publisher:** IEEE RAL

[2026]

Every Microjoule Counts: Zero-Failure Task Execution in Batteryless Sensors

Intermittent computing scheduler for a smart energy harvesting battery

Note: Still needs to be published by the IEEE conference

Authors: Matteo Nardello, Maria Doglioni, Simone Dagnino, Patrick Pastorelli, and Davide Brunelli | **Journal Name:** IEEE Sensors 2025

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING: C1 **READING:** C1 **WRITING:** C1

SPOKEN PRODUCTION: C1 **SPOKEN INTERACTION:** C1

Chinese

LISTENING: A1 **READING:** A2 **WRITING:** A2

SPOKEN PRODUCTION: A1 **SPOKEN INTERACTION:** A1

WORK EXPERIENCE

University of trento

City: Trento | **Country:** Italy

[01/09/2024 - 01/02/2025]

PC science tutor

- Assisting students during labs
- Weekly tutoring
- Exams assistance

SKILLS

Computer science

Zoom | Linux | ChatGPT | Microsoft Office Suite | Google Search | Canva

Programming languages

C++23 (advanced) | C (advanced) | Python (advanced) | Rust (intermediate) | SQL (intermediate) | Bash (intermediate) | Java (intermediate) | Git (basic) | Haskell (basic) | Cuda (basic)

Embedded / Robotics platforms

ROS2 | ESP32 | Texas Instruments | STM32 | Arduino | LoRa | IEEE 802.15.4 | UWB

HOBBIES AND INTERESTS

Chess

Studied chess for 12 years, participated in multiple tournaments organized by Federazione Internazionale di Scacchi such as the international chess festival of Imperia.

Mandarin Chinese

Currently studying mandarin Chinese with the goal of obtaining an HSK certification in the future