

Dr. Edoardo Ghini

Robotics Engineer

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BRIEF DESCRIPTION

Curious and **self-confident** person, level-headed and quite an experimenter. Passionate about programming and believing it to be a form of art. Fascinated by mysteries of **science** and firm believer in technological progress. Enthusiastic about the latest academic discoveries in my field of expertise. Looking forward to learning more about Neuroscience and Human Consciousness and combine them together with **Robotics** and **Artificial Intelligence**.

WORK EXPERIENCE

CURRENT, FROM OCT 2020 (FT)

INRIA, French national research institute
Robotics Engineer

Developed a system from the ground up to **teleoperate** an industrial robot in hazardous environments. Each module of the pipeline is written in C++ and it is containerized with **Docker** and communicate through **ROS** middleware. Dynamics of the system is simulated in a **digital twin** using *dart* and *gazebo*. Joint-space and Cartesian control of the robot through *pinocchio* and *tsid* libraries. Designed a **GUI** for teleoperation with C++ library *ImGui* that introduces interactive **automation** of the task. Experience in URDF creation, modern C++ frameworks and libraries interfacing and acquaintance with robots of the lab: *franka* manipulator & *talos* humanoid robot.

FEB 2019 – OCT 2019 (FT)

La Sapienza, University of Rome
Master's Thesis

Implemented a robotic system to achieve autonomous navigation (**SLAM**) in an urban environment of a mobile robot equipped with a **3D-LIDAR** laser sensor. The whole project has been implemented in C++ adopting the ROS build system. High-level features are extracted from the 3D-point cloud and categorized in geometric primitives. The sensor data is processed using the primitives in order to compute the trajectory of the robot. Used a probabilistic approach that involves using the **Gaussian assumption** and a **Least Square** formulation. The work has been developed in collaboration with the Robotics Laboratory of La Sapienza University.

Master thesis link

MAR 2016 – JUL 2016 (FT)

Translated
Back-end developer

During this internship, I was responsible for the codebase of a web application: **Matecat**, written in PHP. I developed unit-tests to certify the correctness of the core of the application. Brought code coverage percentage from 0% to 25%. Worked with databases and client-server communications: **MySQL** and **Apache**. Learned how to work in **agile** teams, following **scrum** principles. Acquired deep knowledge of advanced testing techniques: **mock objects**, **reflection**, and **TDD**.

Bachelor thesis link

Languages: **Italian:** native **English:** IELTS academic cert. Overall band score **7.0** CEFR level **C1**

Privacy: "In compliance with the GDPR and Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize the recipient of this document to use and process my personal details for the purpose of recruiting and selecting staff and I confirm to be informed of my rights in accordance to art. 7 of the above mentioned Decree".

EDUCATION

2016 – 2019 **Master of Science**
FINAL GRADE 103 / 110
Master in Artificial Intelligence and Robotics
La Sapienza, University of Rome

2013 – 2016 **Bachelor of Science**
FINAL GRADE 95 / 110
Computer Engineering
Roma Tre University

PROGRAMMING SKILLS

LANGUAGES C++, python, \LaTeX , Javascript
Java, bash, MATLAB, PHP

C++20 variadic templates, move semantic
smartpointers, concepts, lambdas

DESIGN OOP, polymorphism, functional programming

TESTING TDD, reflection, mock objects, googletest

LIBRARIES OpenCV, tensorflow, OpenGL, dart, ImGui

DEVOPS cmake, Docker, git, vim, gdb, valgrind

THEORETICAL SKILLS

ROBOTICS dynamic systems evolution, quaternions
CONTROL inverse dynamics, robust control

ROBOTIC SLAM, trajectory planning
NAVIGATION obstacle avoidance, filtering

MACHINE bioinspired networks, CNN
LEARNING spiking neurons, LSTM

ARTIFICIAL multiagent systems, reinforcement learning
INTELLIGENCE first order logic

COMPUTER operative systems, network protocols
SCIENCE algorithms design, databases

REFERENCES

Dr. Serena Ivaldi

POSITION Research scientist
EMPLOYER INRIA

Dr. Giorgio Grisetti

POSITION Professor
EMPLOYER La Sapienza, University of Rome