Magro Mattia

Graduated Biomedical Engineer in the Technologies for eletronic (BTE) field at Politecnico di Milano

LIST OF PUBBLICATIONS OR-CID

Profile

I am a specific and hard-working person with a constant desire to get to know. I always try to accomplish the objectives that I set for my self. I am currently performing a Ph.D. on "Computer Vision for Surgical Robot Assitance" at the Department of Electronics, Information and Bioengineering (DEIB) of Politecnico di Milano, cofunded by MMI S.P.A

Contacts

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Skills

Matlab ●●●●●
C, C++ ●●●○○
Python, Pycharm ●●●○○
LaTeX ●●●○○
Windows (7,8,10) ●●●●●
Microsoft Office package ●●●●●
Linux(Ubuntu) ●●●●○
ROS ●●●○○
CAD: Solidworks ●●●●○
CoppeliaSim ●●●○○
Unity ●○○○○
Arduino UNO ●●●●○
Processing ●●●●○
OrCAD PSpice ●●●○○

Soft Skills

Team working ●●●●○
Organization ●●●●●
Problem solving ●●●●●
Desired of knowing ●●●●●
Public speaking ●●●○○

Languages

Italian (mother tongue) ●●●●●
English (B2) ●●●●○

Extracurricular activities

Seller of study notes on the platform *Docity*, sports and gym, chess' player and volunteering as blood donor.

Education and Training

November 2022– present, **Philosophiae Doctor, (Ph.D)** on the "Computer Vision for Surgical Robot Assitance" topic.

September 2019– April 2022, Politecnico di Milano, Milano
Master's degree in Biomedical Engineering, *Rating*: 110/110
Thesis' project: "Robotic Actuation and Autonomous Control of a Tendon-driven Catheter for Structural Intervention Cardiology",
Supervisor: Elena De Momi

October 2016- July 2019, Politecnico di Milano, Milano
Bachelor's Degree in Biomedical Engineering, *Rating*: 101/110
Thesis' project: "Development of a segmentation software to assess the functionality of the heart",
Supervisor: Alberto Cesare Luigi Redaelli

September 2011– July 2016, IISS B. Pinchetti
High School Scientific Diploma, *Rating*: 95/100

Work Experiences

June 2022– present, Politecnico di Milano (Electronic Information and Bioengineering Department (DEIB)), Milano
Extracurricular internship: during this period, I had the opportunity of working with steerable catheters, aiming to improve the current use, developing innovative robotic platforms and control algorithms. I had worked under the supervision of Prof.ssa Elena De Momi and Prof. Emiiano Votta at Neuroengineering and Medical Robotics Laboratory (NearLab).

Relevant projects

Artery project (Grant agreement No. 101017140, *website link*):
"Development of the actuation system and the control algorithm for a tendon driven robot", Politecnico di Milano, *March 2021 - April 2022*

The current medical intervention trend favors a minimally invasive and percutaneous approach. In my *Master thesis's project*, thus, I worked inside the European Artery project with the aim of designing, with the help of *Solidworks*, the robotic actuation system for the *Mitraclip* system, which has been 3D printed (*Ultimaker Cura printer*). Furthermore, I implemented the control algorithm through *Arduino* and the Robot Operating System (ROS) framework. Finally, I integrated the printed structure and the control algorithm to allow the autonomous achievement of the target position.

Path Planning using Reinforcement Learning (RL),
Politecnico di Milano, *October 2020 - February 2021*

Group project: Path Planning in a surgical scenario of laparoscopy with the aim of letting the *da Vinci robot* reaching autonomously a tumor, avoiding healthy tissues. The environment of the simulation was *CoppeliaSim*, while the toolkit for developing the RL algorithm was *OpenAI-Gym*.

Simulating Motor learning of cerebellar network,
Politecnico di Milano, *October 2020 - December 2020*

Group project: Evaluation and analysis of a Neural Network, developed in *Python*, that mimics the cerebellum activity.

Heart Rate Variability Feature extraction,
Politecnico di Milano, *March 2020 - June 2020*

Group project: Literature review and analysis, using *Matlab*, of the Heart Rate Variability (HRV) signal of newborns.