Leonardo Cecchin

leonardo.cecchin@outlook.it
(+39) 3486939111

Education

October 2018— October 2020
Degree: Master of Science in Automation and Control Engineering
Where: Politecnico di Milano, Milano, IT
GPA: 110/110 cum laude

October 2015— July 2018
Degree: Bachelor of Science in Ingegneria dell'Automazione
Where: Politecnico di Milano, Milano, IT
GPA: 92/110

September 2010— July 2015
Degree: Diploma di Maturità Scientifica in Liceo delle Scienze Applicate
Where: Liceo Scientifico Belfiore, Mantova, IT
GPA: 75/100

Work Experience

November 2020— Ongoing
Position: PhD fellow
Where: Politecnico di Milano
Exploration and Mapping for autonomous vehicles, under the supervision of Professor Lorenzo Fagiano

September 2019— December 2019
Position: Group project
Where: Smart Robots, e-Novia SPA, Milano
Development of 3D human pose estimation algorithm from RGB+Depth video stream. The approach used an optimization routine in order to filter data from the sensor and provide reliable and precise output.

December 2019— March 2019
Position: External consultant
Where: Manni SRL, Bagnolo San Vito, MN
Design of an automatic 3-axis manipulator for polyurethane sandwich panels handling.

October 2017— April 2018
Position: External consultant
Where: Predari Vetri SPA, Levata di Curtatone, MN

Design of an automatic sliding glass roof system.

June 2014— September 2020

Position: Seasonal worker
Where: Az. Agr Cecchin Giacomo SNC
Mechanic and tractor driver

Thesis and publications

August 2021

Leonardo Cecchin, Danilo Saccani, and Lorenzo Fagiano. "G-BEAM: Graph-Based Exploration And Mapping for Autonomous Vehicles". In: *2021 IEEE Conference on Control Technology and Applications (CCTA)*. IEEE. August 2021

Submitted paper

October 2020

Leonardo Cecchin, Danilo Saccani, and Lorenzo Fagiano. "Graph-Based Exploration and Mapping Controller for Mobile Robots". MA thesis. Politecnico di Milano, October 2020

Current research interests

Currently working on a novel exploration and mapping algorithm for autonomous vehicles, in particular multicopter drones. The algorithm takes care of controlling the vehicle to explore an initially unknown environment, storing the acquired information in a map. The approach under study uses a graph as a way of storing information on free and occupied areas of the surroundings, this allows fast computation of paths towards free locations. Theoretical guarantees of the approach are being studied and proved. A couple of multicopter drones, in particular an hexacopter and an octacopter, are being prepared as test platforms for the controller, equipped with positioning systems and LiDAR turrets.

Personal projects

September 2019— Ongoing

Project: Ice climbing tool
Description: Design, prototyping and testing of a lightweight ice climbing tool. The design is performed optimizing the weight distribution of the carbon fiber and ergal construction, in order to obtain the best ergonomics and keeping the weight as low as possible. A pair of prototypes are being tested by professional ice climbers at the moment. The project is in collaboration with my friend Ugo Malguzzi.

May 2019— March 2020

Project: SLA resin 3D printer
Description: Design, manufacturing, assembly and tuning of a stereolithography Resin 3D printer, which makes use of a high resolution LCD display to selectively screen an UV light source in order to cure liquid resin

into the desired shape. The project has seen a series of prototypes before reaching the final and fully functional version.

June 2017— December 2017

Project: CNC Mill
Description: Design, manufacturing, assembly and tuning of a Computer Numerical Controlled mill. The design was based on the results of various prototypes previously made. The final product is actually being used to mill wood, plastics, carbon fiber, aluminum and steel parts both for other projects and under commission

February 2014— Ongoing

Project: Avalanche research quadcopter
Description: Design and prototyping of a quadcopter for avalanche rescue operations. The idea is to use a quadcopter, paired with an ARTVA receiver, to help finding people buried in an avalanche. The project has stopped temporarily due to interference issues between the quadcopter motors and the ARTVA receiver. New ideas are being evaluated to solve the issue and continue the project.

Languages

Italian	Mother-tongue
English	Fluent (CAE, september 2017)

Technical skills

Software

Matlab/Simulink	●●●●○
C	●●●○○
ROS	●●●○○
CAD	●●●●●
Vectorial Graphics	●●●○○
Office/Latex	●●●●○

Hardware

Metal fabrication	●●●●○
Woodworking	●●●●○
General mechanics	●●●●●
Electronics	●●●●○

Soft skills

Problem solving	●●●●●
Creativity	●●●●○
Critical thinking	●●●●●
Teamwork	●●●○○
Stress management	●●●●○

Hobbies and sport

Ski touring, free climbing and alpinism instructor at CAI (Club Alpino Italiano)
Enduro mountain-biking, freeride skiing and snowboarding enthusiast
Electric bass and guitar player
CNC milling, wood and metal fabrication hobbyist

Last updated:
January 11, 2021