

Giacomo Corradini

PhD candidate in autonomous vehicles, Mechatronics engineer in Intelligent Vehicles

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Professional Experience

Head of Racing Team, FSAE team, (E-Agle TRT) Trento, IT 09/2023 - 09/2024

- Track test program planning for vehicle characterization and driver performance evaluation.
- Investigate Vehicle Telemetry data for set-up assessment during track test.
- Develop data analysis tool for post-test telemetry data analysis and estimation of vehicle characteristics.

Vehicle Dynamics and Control engineer, FSAE team, (E-Agle TRT) Trento, IT 11/2021 - 09/2024

- Developed a mathematical model to analyze Double wishbone suspension system.
- Developed a 14 degrees of freedom vehicle model for MATLAB-Simulink simulations.
- Analyze flat-track tire tester measurements, tire performance evaluation, and fitting of the Pacejka model.
- Implemented preview point and clothoid-based lateral controller for vehicle lateral motion in a simulation environment.

Mechanical technician, Internship, (San Zeno) Verona, IT 10/2017 - 05/2018

- Prototyping of a robotic arm controlled with Arduino for pick and place operations.
- Kinematic study and Mechanical design of the robotic arm.
- Collaborated with the end-effector team to meet the design requirements.

Education

PhD Mechatronics, Autonomous vehicle University of Trento Trento, IT 2024-In progress

Title: Analyze, understand and imitate the style and skills of professional and racing drivers to design an autonomous system that drives at the limit like a human.

MSc Mechatronics Engineering University of Trento Trento, IT 2021-2024

Relevant Courses: Dynamics of vehicles, Intelligent vehicles and autonomous driving, Architectures of intelligent transportation systems, Advanced optimization-based robot control, Distributed estimation for robots and vehicles.

BSc Industrial Engineering University of Trento Trento, IT 2018-2021

Relevant Courses: Mechanical Systems and Models, Mechanical Design, Numerical Methods and Computer Programming, Advanced Programming Techniques, Fluid Mechanics, Automatic Control, Fundamentals of Electronics.

Project

Development of a methodology to estimate tire forces and moments of a race car Master Thesis

The methodology is based on measurements of arms deformation of a double wishbone suspension type. The procedure has been validated using a highly detailed vehicle model and then tested in DIL simulations and on track.

Active suspension University project

Analyse the aspects of passive and active suspensions. Develop PID and LQR controllers for a quarter car model subject to excitation from road profile.

Autonomous vehicle simulator University project

Longitudinal control of a vehicle for a traffic light intersection and lateral control for obstacle avoidance.

Kinematics and dynamics analysis of drag reduction system of an F1 car (DRS) University project

Three different mechanisms have been studied and optimized to obtain the best performances in terms of forces, torques, and robustness.

Online Courses & Certifications

- Performance Engineering in F1 (April 2024) - [Motorsport Engineer](#)
- LanguageCert International ESOL B2 communicator (March 2022) - [LanguageCert](#)

Skills

- **Programming:** C, C++, Python, Matlab, git
- **Software:** Matlab, Simulink, Maple, Mathematica, ROS2, Gazebo, PX4
- **CAD:** Inventor, AutoCAD, Solidworks

I am also familiar with MapleSim, Adams, and MoTeC

Languages

- **Italian** [Native]
- **English** [Intermediate] - LanguageCert B2