Tommaso **Bocchietti**

Mechatronics and Robotics MSc student

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"Get things done!"

Enthusiastic mechanical engineer with a strong problem-solving mindset and excellent technical skills in software development.
My hands-on experience has enabled me to develop a diverse portfolio of projects, resulting in a distinctive ability to tackle complex challenges with a structured and analytical approach. I am currently seeking opportunities in the space industry to leverage my technical expertise, grow professionally in a dynamic environment, and contribute to cutting-edge projects.

Experience

Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)

Oberpfaffenhofen, Munich (DE)

Robotics Researcher — *01.04.2025 - 19.12.2025*

- Currently developing a regrasping framework for the DLR's Hybrid Compliant Gripper (HCG).

Polimi Sailing Team

Politecnico di Milano, Milan (IT)

Mechatronic Engineer — *19.10.2023 - 20.10.2024*

- Coded from scratch high performance NMEA0183 libraries.
- Worked with STM32 microcontrollers to create interfaces for the sensors and the control algorithms.
- Selected as the overall winners of the 2024 edition of the "SuMoth" competition among 11 participating teams.

Politecnico di Milano in partnership with RIMAC Automobili

Politecnico di Milano, Milan (IT) & RIMAC Automobili, Zagreb (HR)

Mechanical Engineer Intern — *09.03.2023 - 01.06.2023*

- Idealized and designed an innovative personal transportation vehicle to meet the vision of RIMAC Automobili.
- Collaborated in a team of 10 students coming from different European universities.
- Selected by company engineers as the best project among the 4 participating teams.

Education

Politecnico di Milano

Milan (IT)

MSc in Mechanical Engineering (Mechatronics and Robotics) — *13.09.2023 - 10.12.2025 (expected graduation)*

- Current GPA: 29.32/30

University of Waterloo

Waterloo (CA)

MSc in Mechanical Engineering (Erasmus+ exchange) — *01.01.2024 - 26.04.2024*

Politecnico di Milano

Milan (IT)

BSc in Mechanical Engineering — *14.09.2020 - 21.07.2023*

Skills

Engineering ★★★★☆ MATLAB, Simulink, ROS, Latex
3D CAD ★★★☆☆ CATIA V5, SolidWorks, Inventor
Programming ★★★★☆ C/C++, Python, PHP, MySQL, Java

Languages

Italian Native
English Proficient

Projects

Selection (not exhaustive) of some projects I've worked on that relate to my academic, professional, and personal interests.
I consider them as way to experiment, learn, and get a hands-on approach to engineering.

Academic Projects

Politecnico di Milano, Milan (IT) & University of Waterloo, Waterloo (CA)

MOST OF THE PROJECTS WERE DONE INDIVIDUALLY, AT THE EXPLICIT REQUEST OF THE PROFESSOR. *14.09.2020 - PRESENT*

- **Modeling and Control of a MagLev system**: analysis of the dynamics of a magnetic levitation system, parameter identification and control/filters design (PID, LQR and MPC, coupled with KF and EKF). Simulation in MATLAB/Simulink and hardware deployment on *RTDAC/PCI I/O* board from INTECO.
- **Study on Nonreciprocal Behavior in Time-Space Modulated Beams**: analysis of diode-like behavior in time-space modulated beams by means of piezoelectric shunts. Structure simulations in Comsol Multiphysics, experimental data analysis with MATLAB.
- **Structural Health Monitoring (SHM) as a multivariate outlier detection problem**: analysis of a tie-rods element subjected to both damage and environmental variability, by means of statistical indices as Mahalanobis Squared Distance (MSD) and Principal Component Analysis (PCA).
- **Topology Optimization of Hub Carrier**: mass minimization of a hub carrier structure, with constraints on the compliance and the manufacturability. Analysis with Altair HyperWorks suite.
- **Development of a 2D CFD solver in C/C++ for the solution of the Navier-Stokes equations for incompressible flows**: implementation of the SCGS and SIMPLE algorithms, with validation on the lid-driven cavity flow.

Personal Transportation Vehicle (Sidewalk vehicle)

Politecnico di Milano, Milan (IT) & RIMAC Automobili, Zagreb (HR)

PRO HACKIN' PROJECT 2023, IN PARTNERSHIP WITH RIMAC AUTOMOBILI *09.03.2023 - 01.06.2023*

Idealize and Design a Personal Transportation Vehicle (Sidewalk vehicle).

Team-based project involving students from 4 top European universities, with corporate feedback sessions after each hackathon. Selected as winning team by RIMAC Automobili engineers.

- Hackathon 1: visions, user personas and functions & requirements
- Hackathon 2: functional decomposition, morphological matrix and concepts development
- Hackathon 3: CAD design, FEM simulations, FMEA and cost analysis.

Model Rocket with On-Board Flight Computer

Personal Workshop, Como (IT)

PERSONAL PROJECT TO CELEBRATE BSC *12.07.2023 - 21.07.2023*

Design, optimization and realization of a $63cm$ model rocket.

Final design was achieved after a couple of iterations between CAD model and CFD simulations. Built mostly from cheap materials (cardboard & wood) and 3D printed parts (PLA based). Essential characteristics:

- Launched and recovered without any damage, maximum elevation $+538m$
- Flight time $\approx 60s$, maximum speed reached $+120m/s$, maximum acceleration $+10g$.
- Simulations driven design ($C_D \approx 0.806$)
- On board flight computer in $< 20cm^3$, with barometric, temperature and acceleration sensors capable of logging data.

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