Marco Ruggia

Address: Tivolistrasse 11 - 7000 Chur (CH)
Phone: +41 79 485 32 48
E-mail: marco.ruggia@hotmail.it

Higher Education

02.2019 – 02.2022 **MSc Mechanical Engineering ETH, Zürich Switzerland**
Master Thesis: Design and Control of an Aerial Layouting Tool
Grade: **6/6**
Semester Thesis: Trajectory Optimization Methods for Implicit Time-Lag Systems
Grade: **6/6**
Courses: System Identification, Robot Dynamics, Model Predictive Control Dyn.Prog. and Opt.Ctrl., Recursive Estimation, Intro to Mathematical Optimization, Computational Mechanics I and II, Computer Vision, Computer Graphics, Orbital Dynamics

09.2014 – 02.2019 **BSc Mechanical Engineering ETH, Zürich Switzerland**
Bachelor Thesis: Design and Analysis of small-scale Angle of Attack sensors
Grade: **5.75/6**
Focus Project: ftero airborne wind energy system
Responsibilities: hover & VTOL transition controller (PX4), sensor embedding
Grade: **5.5/6** (team of 8)
Innovation Project: **1st** place in construction rating (90 teams of 5)
Elective Courses: Bioengineering, Electrical Engineering II, Control Systems II, Signals and Systems, System Modeling, Computational Methods

09.2013 – 06.2014 2 Semester **Human Medicine University Fribourg, Fribourg Switzerland**

10.2009 – 06.2013 **Gymnasium Bündner Kantonsschule, Chur Switzerland**
Core Subject: Physics and applied mathematics
Matriculation Project: Simulation of landslides and avalanches (C++/DX9)
Grade: **6/6**

Work Experience

09.2023 – ongoing **Lecturer and Researcher** at **University of Applied Sciences of the Grisons, Chur Switzerland**
- Lecturing and putting together of courses "Land- and Water-based Robotics" and "Robotics and Automation" for a bachelor's degree in "Mobile Robotics"
- Grant acquisition and project execution of the morphing drone project *flifo* funded by *armasuisse S+T*

11.2022 – 07.2023 **PhD candidate** at **Biomimetics Lab University of Groningen, Netherlands**
- Study of bird kinematics and mechanics including literature research and observations form pigeon dissections
- Advising of student projects and lab workshop management/expansion

07.2022 – 09.2022 **Research assistant** at **Computational Robotics Lab ETH, Zürich Switzerland**
- Extensive torque response testing of quasi-direct drive motors
- Programming of unified motor interface driver in CRL codebase (C++)

03.2021 – 05.2021 **Research assistant** at **Computational Robotics Lab ETH, Zürich Switzerland**
- Research into and mathematical derivations of various trajectory optimization methods for implicit time-lag systems (continuation of semester thesis)
- High performance implementation of these methods (C++)

06.2019 – 09.2019 **Internship** at **Engie Services AG, Oerlikon Switzerland**
- Development of a high-speed data aggregation server for timeseries data to location data aggregation (C++, NoSQL)
- Development of a Thingsboard-Widget for displaying said data (JS, WebGL)
- Evaluation of various CNN Frameworks on various low-cost devices

09.2018 – 06.2019 **Civilian Service** at **CC TES Lucerne University, Horw Switzerland**
- Characterization of phase change dispersions (building and operation of a test bench & data analysis)

Publications

C. Lanegger, M. Ruggia, M. Tognon, L. Ott, R. Siegwart. **Aerial Layouting: Design and Control of a Compliant and Actuated End-Effector for Precise In-flight Marking on Ceilings**. Robotics: Science and Systems 2022

Patents

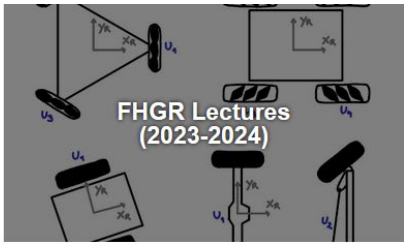
PCT/EP2023/062170, **Construction robot with parallel manipulator** (pending)

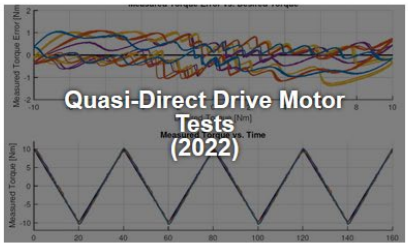
Grants

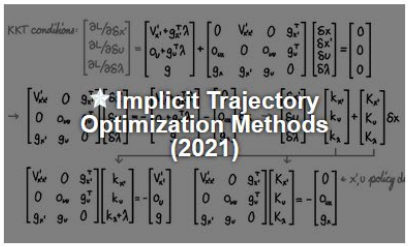
M. Ruggia, C. Bermes, **Passively morphing drone for small gap traversal**, 78'000€, armasuisse S+T grant 2024

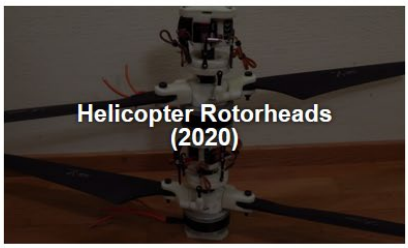
Projects

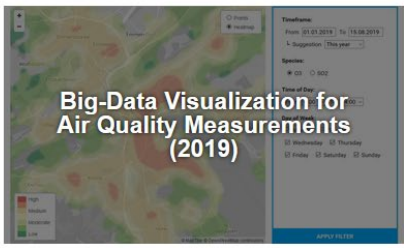
Please visit my website under [marcoruggia.ch](). There you can find information on my projects:











Projects (continued)