

Marco Ruggia

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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 <i>Courses:</i> 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 <i>Bachelor Thesis:</i> Design and Analysis of small-scale Angle of Attack sensors Grade: 5.75/6 <i>Focus Project:</i> Aero airborne wind energy system Responsibilities: hover & VTOL transition controller (PX4), sensor embedding Grade: 5.5/6 (team of 8) <i>Innovation Project:</i> 1 st place in construction rating (90 teams of 5) <i>Elective Courses:</i> 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 Kantonschule, Chur Switzerland <i>Core Subject:</i> Physics and applied mathematics <i>Matriculation Project:</i> Simulation of landslides and avalanches (C++/DX9) Grade: 6/6

Work Experience

11.2022 – ongoing	PhD candidate at Biomimetics Lab, University of Groningen Netherlands <ul style="list-style-type: none">• Study of bird kinematics and mechanics including literature research and observations from dissection of pigeon cadavers• Advising of student projects and lab workshop management/expansion
07.2022 – 09.2022	Research assistant at Computational Robotics Lab ETH, Zürich Switzerland <ul style="list-style-type: none">• Extensive torque 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 <ul style="list-style-type: none">• Research 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• Characterization of phase change dispersions (building and operation of a test bench & data analysis)• Development of a web tool for building energy-consumption consultation
01.2015 – 02.2015	Internship at Rhaetian Railway RhB Workshop, Landquart Switzerland

Skills

Programming: C/C++ (*ROS, DirectX, OptiX, OpenGL, WinAPI, AVR & SAM MCU, ..*), Python (*Tensorflow, OpenCV, Data Analysis, ..*), MATLAB (*Modelling, Simulation, Optimization, ..*), Web (*HTML, JS + WebGL, PHP, SQL, NoSQL, ..*), G-Code, ..

Software: Siemens NX (*Modelling, CAM, FEA*), LabVIEW, GIT, Adobe CC (*Photoshop, Illustrator, Audition, Premiere*), QGIS, Microsoft Office, ..

Tools: Router/Mill/Lathe (CNC & Manual), 3D Printers (FDM, Multi-Material, SLA), PCB Manufacturing, Soldering, CFRP lamination, most common hand & power tools, ..

Spoken Languages: English, German, Italian, Serbian

Projects



