

# Lisa Mareschal

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## EDUCATION **EPFL**

Sept 2019 – April 2022

**Ecole polytechnique fédérale  
de Lausanne**, Switzerland  
& **Harvard Medical School**

Sept 2016 – August 2019

**EPFL**, Switzerland

Sept 2014 - June 2016

**Institut International de Lancy**,  
Switzerland



**Master in Robotics with medical orientation**

**Minor in Management of Technology & Entrepreneurship**

Final grade: 5.43/6

Machine Learning, Image processing, Model Predictive Control, Mobile robotics, Sensors, Statistics, Manufacturing, Project Management, Finance

**Bachelor of Science of Microengineering**

Final grade: 4.79/6

**Scientific Baccalauréat**

Specialization Mathematics – Graduated with the highest Honors: 19.5/20



## WORKING EXPERIENCE

Nov 2024 – Current

**Zurich University of Applied Sciences**  
**Biomechanical Engineering**  
**ZHAW, BME**  
Zürich,  
Switzerland

**Research Engineer**

Design and prototype embedded systems for medical applications using C++, Arduino, Nextion. Develop custom UIs and BLE communication for device interaction. Prototyping tasks involve CAD design, electronics, soldering, 3D printing, and hands-on assembly. Conduct testing and debugging to ensure reliability in real-world scenarios. Research projects including data analytics for shoulder pathologies predictions and stroke rehabilitation. Conference presentations. Tools: Slicer, Statistical Shape modelling, Python coding.

Sept 2022 – Nov 2024

**Crédit Suisse / UBS**  
Zürich, Switzerland

**Quantitative Engineer**

**QE Product Development Team**

Build a web app to support Trading, Sales and Structuring teams performing data analysis. Enrich and optimize the tools both in terms of functionalities and computation times. Work within a team of developers to push weekly releases in a production environment. Frontend: JavaScript within a React framework. Backend: Python relying on libraries such as Flink pipelines to orchestrate tasks.

Sept 2022 – Dec 2023

March – Dec  
Sept - March

**Graduate program**

**Quantitative Engineer – QE Product Development Team**

**Quantitative Engineer – Portfolio Risk Platform**

Developed from scratch a tool that computes regulatory metrics to support risk analysis teams and provide them with an interactive dashboard (Dash Python). Development includes cleaning of input data, design of SQLite database, writing unit and integration tests.

March 2020 – June 2020

**Alphadyne Asset management**,  
NYC, USA

**Technology Intern**

Compared the output of internally-built asset pricer models to the output of commercially-available pricer models.  
Aspects of Financial engineering, model validation, Python coding.



## COMPUTER SKILLS

**Programming languages:** Python, React JS, Matlab, C, C++, C#, ASM, SQL

**Software & libraries:** Git, ROS2, LaTeX, Microsoft Office, Redux Toolkit, Dash, Flink, CAD (Catia), Unity, Slicer, Nextion



## ACADEMIC PROJECTS

**Oct 2021 – March 2022**

**Surgical Navigation and Robotics lab**  
**Brigham and Women's Hospital**  
**Harvard Medical School,**  
Boston, USA

### **Master thesis on System integration and Pre-clinical evaluation of adaptive needle steering for image-guided prostate interventions**

Build a prototype to allow testing of a closed-loop model predictive control algorithm that corrects needle deviation within tissues. Challenges implied: Design (in CATIA) and build a 4 DOFs needle guide with x,y,z and rotation sensors (Arduino). Receive and send robot position using ROS2 (C++). Write a module in 3D Slicer to set the target point of the needle and visualize the needle's live position (Python). Perform the first ex-vivo experiments and analyze the data (Matlab).

**January – June 2021**

**Computer-Human Interaction in**  
**Learning and Instruction (CHILI lab)**  
**EPFL, Switzerland**

### **Machine learning department - Semester project II**

I developed a program to acquire trajectories from robots (*Cellulo*) following different swarm behaviors. I then extracted and identified discriminant features using statistical and clustering techniques to see if we can learn interaction rules between robots from these features (programming-by-demonstration).

**September – January 2020**

**Laboratory of Movement Analysis**  
**and Measurement (LMAM lab)**  
**EPFL, Switzerland**

### **Machine learning department - Semester project I**

Analyzed the effect of sensor location around the belt on the estimation of gait speed using a machine learning regression algorithm and data treatment.

**November – December 2019**

**EPFL, Switzerland**

### **Robotics department – team of 4**

Implemented path planning, local obstacle avoidance algorithm, Kalman filtering and image processing to allow a robot (*Thymio*) to navigate and localize itself on a map.

**January – June 2019**

**EPFL, Switzerland**

### **Robotics department – team of 2**

Programmed in C++ an Eucuk-2 robot to escape a labyrinth using color and pattern-recognition on pictures taken by low-resolution camera.



## LANGUAGES

**French (native) - English (C1) - Spanish (B2) - German (A1 loading...)**



## AWARD & PUBLICATIONS

**2022 – “NCCR Robotics MSc Thesis Award to Master Students looking to celebrate the best women master students in the field of robotics in Switzerland.”**

**2023 – Participate in the publication of “Data-driven adaptive needle insertion assist for transperineal prostate interventions” in Physics in Medicine & Biology.**

**2024 – Presenting at the European Society of Biomechanics (ESB) congress research on “Combining virtual reality gaming and active sitting for postural control analysis”.**



## INTERESTS

**Sports:** Taekwondo Black Belt, running, skiing, kitesurfing, diving (PADI)

**Artistic activities:** Plastic Arts, painting, pottery, sewing, piano

**Travelling:** France, Switzerland, USA, Spain, Morocco, Korea