

# Titouan Renard,

Master student in Robotics with a minor in Data Science

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I am a student at EPFL currently pursuing a Master of Sciences in Robotics with a minor in Data Science. I am interested in research with a focus on control theory, machine learning and their applications to robotics systems.

## Education

Ongoing **Master in Robotics with a Minor in Data Science**, Lausanne, Switzerland 2020-Present  
EPFL, STI and IC faculties

**Bachelor in Microengineering**, Lausanne, Switzerland 2020  
EPFL, STI faculty

**Bilingual Maturité**, Neuchâtel, Switzerland 2016  
French-English bilingual high-school, Lycée Denis de Rougemont, Physics and Applied Math

## Past Projects

**Power-Optimal Trajectory Generation for Airborne Wind Energy**, semester project at LA3 2021  
(EPFL), under the supervision of Prof. Colin Jones.

Work on a strongly non-linear and non-convex optimization problem, implemented an appropriate iterative solver method to deal with the non-convexity in Matlab. (Currently finishing the project)

**Deep Robust Navigation with Cognitive Mapping Visual Representations**, project done in 2021  
the "Visual Intelligence - Machines and Minds" course at (EPFL), course given by Prof. Amir Zamir.

Development and implementation of a novel deep-reinforcement learning method for visual navigation. [Presentation Video of the Project](#).

**Summer Internship**, Biorobotics Lab EPFL, at the Biorobotics Laboratory at EPFL, under the 2018  
supervision of Alessandro Crespi.

Implementation of a simple vision-based localization system using C++ and OpenCV.

## Skills

**Programming**, in C, C++, Javascript, Matlab, Python and Scala. Experience with OpenCV, Scipy, CasAdi, Tensorflow and Pytorch, comfortable with Unix systems and git. Experience with Google Cloud Platform for training deep learning models.

**Math and Applied Math**, Probabilities, Linear Algebra, Calculus, Dynamic System Theory and Control Theory, Signal Processing, Algorithmic Design and Analysis. Strong abstraction capacity, ability to mathematically formulate a concrete problem.

**Soft Skills**, public speaking, writing and team management learned in the context student associations, French (native proficiency), English (full proficiency), German (B2)

## Relevant Courses

Course	Grade
Visual Intelligence, Machines and Minds (CS-503)	?/6
Legged Robotics (MICRO-507)	?/6
Model Predictive Control (ME-425)	5.75/6
Algorithms (CS-250)	5.5/6
Advanced Algorithms (CS-450)	6/6
Artificial Neural Networks (CS-456)	5.75/6
Aerial Robotics (MICRO-502)	5/6
Computer Vision (CS-442)	5.5/6
Distributed Intelligent Systems (ENG-466)	5/6
Analysis and Modelling of Locomotion ((BIOENG-404))	5/6
Functional Programming (CS-210)	5.5/6

## Teaching Experience

### Student-Assistant at EPFL

#### *Artificial Neural Networks*

2020

For the Computer Science and Data Science students.

#### *"Physique Générale 1" (Newtonian Mechanics)*

2018-2021

For the PH-101(b) (Microengineering, Electrical Engineering and Material Sciences sections) and PH-101(d) courses (for the Mechanical Engineering section).

#### *"Microinformatique" (basics of embedded systems programming)*

2019

For the Microengineering students.

#### *Basics of Robotics*

2018

For the Microengineering students.

#### *Material Sciences Practicals*

2018

For the Microengineering and Material sciences students.

## Volunteer Experience

### Unipoly, student's association for sustainability at EPFL.

2019-2022

Board member in an association of approximately 300 membres with a 20'000 CHF annual budget.

#### *Président*

2021-2022

Experience with team management and budgets.

#### *Responsable Politique,*

2020-2021

Experience in interactions with stakeholders and EPFL's direction on matters of sustainability on campus.

#### *Responsible of Events* for the 2020 sustainability week on EPFL campus

2019-2020

Management and coordination of about 30 events (conferences, workshops) on EPFL and UNIL's campuses.

#### *Writer* for Unipoly's Journal

2019-2021

One to two articles per year.

#### **European Youth Parliament, Switzerland**

2015-2016

English language public speaking experience.