

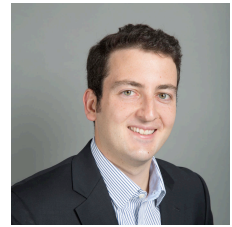
# MARC ANDRÉ LEROY

Robotics Engineer – Microengineering EPFL Graduate

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## SUMMARY

Having had a **multidisciplinary** engineering education, my curiosity is attracted by the fields of **robotics**, **control systems** and **aerospace**. I am an open-minded person with **international** experience and my **language skills** suggest assignments in a multinational environment

## WORK EXPERIENCE

### Pix4D S.A.

Lausanne, Switzerland

*Hardware Engineer / Industrial Engineer*

01/2018 – Present

I work in the Crane Camera Team developing an **IoT camera** solution for daily construction site mapping. The results are used by BIM / Construction Site Managers to support them in their critical decisions.

At the time I joined the company, our division was very small (5 people), so a **variety of tasks** was asked of me while the product was evolving and the business was growing.

In particular my work involved **sensor integration** (IMU, GPS, etc.) and **fusion** for **state estimation** using a variety of programming languages (Python, C/C++), **mechanical design** (Autodesk Inventor), **PCB development/verification** (KiCAD), as well as other tasks when required, such as **product manufacturing**, **workshop** and **stock levels management**, **business development** and **pre-sales / customer support** thanks to my language skills.

All this led to a successful product, being increasingly adopted by major companies in the construction industry. Our team has since then doubled, and I have been able to devote myself solely to R&D tasks.

Currently my focus is on improving the state estimation algorithms I implemented, by making sure the system provides accurate, noise-rejecting data, even with its low-cost sensors in order to keep the manufacturing cost of the product within its budget.

### NASA Ames Research Center

Mountain View, United States of America

*Research Scholar*

02/2017 – 08/2017

I worked in the Dynamic Tensegrity Robotics Lab within the Intelligent Robotics Group to develop **novel locomotion control algorithms**, as well as support the **manufacturing and testing of a tensegrity robot** that will be used in future NASA missions.

I presented my work in July of 2017 at the Workshop on Structurally Adaptive Tensegrity Robots during the NASA/ESA Conference on Adaptive Hardware and Systems held at the California Institute of Technology in Pasadena, United States of America

### Universo S.A. – Swatch Group

La Chaux-de-Fonds, Switzerland

*Warehouseman*

07/2014 – 07/2014

I did an internship where I worked in the general mechanics workshop of the company; I used a Numerical Control Machine, lathes, mills and drills; repaired small mechanical pieces and assemblies and assisted moving heavyweight machines during the company's relocation

### Swiss Armed Forces Command Support Organization

Jassbach and Zimmerwald, Switzerland

*Private First Class Strategic Radio Explorer*

10/2011 – 08/2012

I did my full military obligations as a Swiss citizen in the Center of Electronic Operations, where I was working with classified equipment. I also instructed new and returning privates how to use the equipment

## EDUCATION

### Ecole Polytechnique Fédérale de Lausanne (EPFL)

Lausanne, Switzerland

*MSc in Microengineering*

09/2015 – 09/2017

Major in Robotics and Autonomous Systems, minor in Space Technologies

### Ecole Polytechnique Fédérale de Lausanne (EPFL)

Lausanne, Switzerland

*BSc in Microengineering*

09/2012 – 07/2015

Focus on Systems and Control, Manufacturing Engineering, Electronics and Photonics

## SKILLS

- **Robotics:** Systems Engineering, Mechanical Design, Kinematics, Dynamics, Actuators, Sensors, Microcontrollers, Electronics, Signal Processing, Image Processing, Computer Vision, Control, Localization, Navigation, Locomotion, Haptic Interfaces, Machine Learning
- **Control Systems:** Linear, Nonlinear, Model Predictive, Central Pattern Generators
- **Computer-Aided Design and Manufacturing:** SolidWorks, Autodesk Inventor, CATIA, Fusion 360, KiCAD, 3D printing
- **Programming and Scripting:** Matlab, Simulink, Simscape, C++, C, Python, LabVIEW (Certified Associate Developer in 2015), Modelica, Assembly, JavaScript
- **Productivity:** LaTeX, Microsoft Office Tools (Excel, PowerPoint, Word, Outlook)

## PROJECTS

- **Master's thesis:** *Manufacturing, Control and Testing of a Tensegrity Robot for Planetary Landing and Exploration* – My Master's thesis was a collaboration between **NASA Ames Research Center** and EPFL's **Biorobotics Laboratory**. The innovative results of my work were also presented in a conference and in public outreach activities throughout my time at NASA Ames Research Center
- **Semester projects at EPFL:**
  - *CleanSpace One capture system dynamics and design* – I performed reliability simulations to optimize the shape of a satellite's subsystem. My work was included in a publication I co-authored presented at the 2017 International Astronautical Congress in Adelaide, Australia
  - *Model of energetic cost against rough terrain and perturbations* – I conducted a study on how the energy consumption of a biologically inspired exoskeleton could be reduced
  - *Design of an adaptive structure for multirotors to transport packages of different sizes* – I designed and manufactured a modular drone structure that can fit different packages

## LANGUAGES

- **French:** Mother tongue
- **Portuguese:** Mother tongue
- **English:** Mother tongue
- **German:** Advanced (C1)
- **Spanish:** Intermediate (B1)

## EXTRA-CURRICULAR ACTIVITIES

- I was a selected participant in two space engineering international workshops:
  - One in 09/2016 for 25 students at the Swiss Space Center where I built a ground station to receive satellite signals
  - One in 07/2016 for 60 students at Bauman Moscow State Technical University in Moscow, Russian Federation, where I was the *Robotics Group Leader* (8 people) in the Group Project
- From 09/2014 to 12/2016, I was a part-time **Teaching Assistant** at EPFL in multiple courses taught in French or English for 1<sup>st</sup> and 2<sup>nd</sup> year Bachelor students
- I was a member of different **Student Associations** throughout my education:
  - *MSc in Microengineering Students' representative* – from 09/2016 to 09/2017, I was the mediator between the 147 students, the Professors and the Direction
  - *Treasurer for "Dynamic"* – I managed the annual budget of the Microengineering students' association from 05/2015 to 06/2016
  - *Staff Manager at the "LudIC" event at EPFL* – from 05/2013 to 06/2016, I leaded teams of approximately 20 volunteers during the biannual "LudIC" events at EPFL
  - *Member of the "Coaching EPFL"* – from 09/2013 to 07/2014, I was the coach for 15 1<sup>st</sup> year BSc in Microengineering students
- Sports: Windsurfing, Tennis, Volleyball
- Music player (drums)

## PERSONAL INFORMATION

27 years old – Single – Swiss and Brazilian dual citizenship – All military obligations already fulfilled

*Last updated on April 22<sup>nd</sup> 2020*