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 1st and 2nd 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 1st 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 22nd 2020