

# Guillaume Fradet

DATA SCIENTIST · SOFTWARE ENGINEER

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Visit my website for more information (portfolio, interests, ...)

## Summary

Engineering student in Data Science at École Polytechnique, I am fascinated by AI and Machine Learning. I truly believe in the *#AIforGood* movement, that aims to place the AI at the service of the human and the common good. In the years to come, I aspire to join major projects in e-health, that will revolutionize the current practices.

## Education

### Ecole Polytechnique

Palaiseau, France

MASTER 2 IN DATA SCIENCE

2018 - 2019

- Advanced topics in Machine Learning
- Advanced Learning for Text and Graph Data (NLP)
- Reinforcement learning
- Optimization for Data science
- Introduction to Graphical Models
- Big Data Framework (Hadoop, Spark, ES)
- Systems for Big Data Analytics
- Visualization and Visual Analytics for Data Science
- Deep Learning
- Data Stream Processing
- Machine Learning, Business case
- Big data & insurance
- Data infrastructure (NoSQL)

### ESILV

Paris - La Défense, France

COMPUTER SCIENCE ENGINEER

2014 - 2019

- ESILV is a generalist and digital engineering school, located in the Pole Universitaire Leonard de Vinci. Ranked 9<sup>th</sup> best French engineering school in 2019 according to Usine Nouvelle.
- Activities and associations: Member and Communication manager of the association of robotics DaVinciBot.

### Louisiana Tech University

Ruston, LA, USA

COMPUTER SCIENCE

Fall 2017

- Thanks to an exchange program, I had the opportunity to study in this American university for one semester.
- GPA: 4.0 (A)

### Saint Dominique High School

Mortefontaine, France

SCIENTIFIC BACCALAUREAT

2014

- With high honours

## Skills

<b>Programming</b>	Python, C#, Java, R, Spark, Arduino, LaTeX
<b>Python libraries</b>	NumPy, Pandas, Scikit-Learn, Keras, Matplotlib
<b>Web development</b>	HTML, CSS, JavaScript, Node.js, Express.js
<b>Databases</b>	SQL (MySQL, PostgreSQL), NoSQL (MongoDB), ElasticStack
<b>Software</b>	Git, Jupyter, RStudio, Linux, Android Studio, SolidWorks, Adobe Photoshop
<b>Languages</b>	French (native), English (fluent), Spanish (notions)

## Experience

### Altran Research

Vélizy-Villacoublay, France

DATA SCIENTIST RESEARCHER IN MEDICAL IMAGING (INTERN)

April 2019 - PRESENT

- Application of Deep Learning methods on MRI images to classify, detect and segment benign and malignant tumors (lipomas and liposarcomas). Nowadays, the diagnostic of the latter is made by biopsy after an MRI scan. However, the benign/malignant ratio is very low for lipomas, so most of the biopsies are made unnecessarily. A diagnosis made directly from MRI images would be an interesting alternative, both for patients who would avoid an invasive examination, and for medical structures that would save money and time.  
The goal of the internship is to write a research article where different Deep Learning techniques and approaches are compared on this dataset.
- One of the challenges when it comes to medical imaging is usually the very limited amount of samples available for training and validation. To work around this problem, we used data augmentation and Generative Adversarial Networks (GAN) to generate new samples.
- Work in collaboration with the biomedical imaging research laboratory CREATIS.

## SoftBank Robotics Europe

Paris, France

FULL STACK DEVELOPER (INTERN)

April - August 2018

- For 5 month, I joined the System Integration & Verification department. The members of this team are in charge of planning and performing hardware tests, in order to check the validity of the robots before their production. The internship mission was to create an archiving system to store the data from the tests performed on NAO and Pepper.
- I have developed a web application based on a RESTful API, which is now deployed and used in several departments of SoftBank Robotics. The application, named A.S.T.R. - Archiving System Truly RESTful, and the Python library are Open Source and available on the GitHub of the company.

- Elaboration of specifications.
- Technology choices.
- Development of the web application (API and website).
- Development of a Python library.
- Managing the sending of large files to the server.
- User management.
- Advanced archive search.
- Deployment management.

- *Techs used:* Node.js, MongoDB (NoSQL), Express, Python, Git, Docker, Ansible
- *Environment:* Linux
- *Source code:* the [web application](#) and the [Python library](#)

## Fishfriender

Paris, France

NODE.JS DEVELOPER (INTERN)

June - July 2017

- FishFriender is an online platform that aims to modernize the angling industry.
- Mission: automate data recovery and process partner data to adapt and insert them into the application database. The partner data were either in Excel sheets or in web pages. I extracted the data using web scraping techniques.

- *Techs used:* Node.js, JavaScript, SQL, JSON
- *Environment:* Mac OS

## Marmon Sports

Aubervilliers, France

SALES ASSISTANT

June - September 2016

- Summer Job in a sports shop.

## Projects

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### Object detection / segmentation of Mars craters

COMPUTER VISION AND DEEP LEARNING

December 2018

- Application of object detection / segmentation (Mask R-CNN and RetinaNet) on Mars satellite images. The goal was to detect automatically craters.

### Q-Learning implementation

REINFORCEMENT LEARNING

February 2019

- Implementation of the reinforcement learning technique Q-Learning. The environment was MountainCar (OpenAI Gym), where the goal is to teach a car to swing from left to right so that it can climb the mountain.

### VAST Challenge

VISUALIZATION AND MACHINE LEARNING

October - December 2019

- Development of various visualizations to respond to the VAST mini-challenge 1 of 2018. The goal was to discover if the actions of a company had led to the migration of birds. Spatio-temporal data analysis led to the development of an interactive map to observe the movements of different species. Spectral analysis of bird songs has also revealed interesting facts.

### A.S.T.R. - Archiving System Truly RESTful

DEVELOPMENT OF AN OPEN SOURCE WEB APPLICATION - SOFTBANK ROBOTICS

April - September 2018

- Development of an Open Source archiving system allowing the storage of any type of data. The users can interact with web-based system through the website or directly from scripts (using the developed Python library). Originally, the application was designed and developed within SoftBank Robotics to store tests performed on NAO and Pepper robots.

### French Cup of Robotics

2016 AND 2017 EDITIONS

2016 - 2017

- Participation in two editions of the French Robotics Cup with DaVinciBot, association of the Pôle Universitaire Léonard de Vinci.

## Interests

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- Traveling around the world
- Climbing and hiking
- Scuba diving (Advanced Open Water)
- Playing drums and guitar
- Motorbike
- Video editing