

## SKILLS

<b>Programming</b>	Python – C++ – JavaScript – Linux – BASH
<b>Tools</b>	Git – LaTeX – Matlab/Simulink
<b>Language</b>	French (Native) - English (Fluent)

## TECHNICAL EXPERIENCE

### Research Project: Navigation Integrity of Lidar-based localization

Sep 2021 - Dec 2021

*Navigation Lab - Illinois Institute of Technology*

*Chicago, Illinois*

- Lidar-based localization of autonomous vehicles, in an area with low GNSS availability, with Velodyne's Puck sensor and **MATLAB** modelization, to compensate for IMU drift. Building a method to ensure landmark identification against the misassociation problem.  
- I established a Misdetection Error Model to quantify the Probability of Hazardously Misleading Information. I derived precise  $\sigma$  and  $3\sigma$  probabilities of tree misdetection, considering the noise parameters of the vehicle, the sensor, and the landmarks. I also researched the implementation of the Error Correction Codes domain (**Hamming and BCH codes**) to navigation safety.

### Assistant Engineer Internship: Machine Learning and Data Science Project

Jun 2021 - Aug 2021

*Kapaix Ltd*

*London, England (Remote)*

- Assessing the data quality of a time-series database for a Big Data Management Company. I designed neural network architectures for anomaly detection purposes by analyzing discrepancies of frequency and amplitude. Two models: classification (MLP architecture) and pattern recognition (auto-encoder) models built with **Python: Keras - TensorFlow - Pandas**.  
- I preprocessed the dataset through the construction of histograms with variable time frames. I used **Principal Component Analysis** and **k-means clustering** as a first analysis tool.

### Master's Thesis: Isogeometric Representation of Turbojet Blades

Sep 2020 - Dec 2020

*Structure Mechanics laboratory - INSA*

*Lyon, France*

- Building an algorithmic solution to merge CAD and FEA methods through Non-Uniform Rational Basis Spline (**NURBS**) manipulations. I designed an adaptive fillet to join the blade and its root volumes by implementing a fillet patch mesh on **Python: NumPy - geomdl**.  
- I analyzed the structure of engine blades using parametrization models by projection, interpolation, and approximation.

### Management Internship

Jul 2018- Aug 2018

*Firplast*

*Lyon, France*

I contributed to the daily operations of a local French company, from materials handling and inventory management to accounting and HR communications. This hands-on business experience allowed me to discover every level of a company.

## EDUCATION

### Master of Engineering - Illinois Institute of Technology

Jan 2021 - Dec 2021

*Robotic Motion Planning (SLAM, Kalman filter) – EV Powertrain (EPA drive cycles) – Machine Learning (PCA, clustering, Bayesian, CNN, RNN) - CAD/CAM (Fusion 360)*

> Drive cycle designed for autonomous vehicles; testing Wh - SOC consumption; simulation of the pursuit of a standard vehicle  
> Graph SLAM algorithm implementation on the Victoria Park dataset

### Master of Science in Mechatronics- National Institute of Applied Sciences - France

2018 - 2020

*Control Theory (PID, optimal control LQR) - Robotics, State-Space Analysis (Simulink) – FEA (Ansys, Abaqus) – Fluid dynamics, Thermodynamics – CAD (CATIA, SolidWorks)*

> CAD project on SolidWorks: conception of a planter subsystem for the agricultural Company "L'Atelier Paysan"  
> Kinematics and dynamics modeling of a Scara Robot; PID and linearized command control  
> Consciousness and Neuroscience project: Statistical and Bayesian brain research

### Bachelor of Engineering in Electronics and Computer Science - CPE Lyon - France

2015 - 2018

*Analog and Digital Systems (Microcontrollers implementation) - Electronic Architectures (VHDL Design on FPGA) - Programming - Mathematics - Physics - Business*

## ACTIVITIES

### Graduate Student Ambassador

Apr 2021 — Dec 2021

Job on Campus, Admissions Office at Illinois Tech (Salesforce and GeckoEngage Chatbot)

### Student Government Association at INSA Lyon

2019 - 2020

### Physics and Mathematics tutor

2017 - 2020