MOHAMED AHMED MALOUM

I am currently completing a six-month internship in computer vision and autonomous systems with Safran, from April to October 2024. Moreover, I am interested in pursuing a CIFRE thesis later on.

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EXPERIENCE

SAFRAN - Research Internship

April 2024 – October 2024 Magny-les-Hameaux

The goal of this internship is to develop a **dense SLAM** method for monocular RGB cameras using deep learning and other state of the art advancements. Real-time functionality, as well as the method's ability to be embedded on a robot, are essential criteria.

ASTEK - Research Internship

March 2023 – September 2023 Paris

Development of a **vision-based geolocation technology** for a large-scale civil **drone (UAV)** equipped with a monocular **ventral camera**. The objective was to enable the drone to operate **without GPS**, while navigating various terrains including **urban**, **rural**, and **forested** areas, even in challenging weather conditions such as **rain**, **fog**, and **snow**.

Contributions:

- **State of the art** of existing scientific papers on robust aerial image registration for UAV (drone) geolocation technology.
- Developed a geolocation algorithm based on aerial **image matching**, using **SURF descriptors** and **OpenCV**.
- Devised a method to **predict the geolocation drift** of the device.

SYSNAV - Engineering Internship

June 2022 – September 2022 Vernon

Modeling and calibration of non-linearities in magneto-inertial sensors.

Contributions:

- Developed and implemented calibration algorithms in **Python**.
- Incorporated a **Kalman filter** algorithm to fuse data from various sensors, ensuring high-performance navigation.

PROJECTS

IonSat Project

Centre Spatial de l'École Polytechnique

August 2021 – September 2022 Palaiseau

Working on the attitude determination and control system (ADCS) for a nanosatellite launch project.

- Studied inertial sensors, actuators, and their modelisation in determination and control algorithms (**Kalman filter**, Bdot).
- Implemented a nanosatellite trajectory simulation algorithm in **Matlab**.
- **Co-authored a publication** accepted and presented at the 73^{rd} **International Astronautical Congress (IAC)** in Paris.

STRENGTHS & SKILLS

Hard-working | Curious | Motivator & Leader

Python | Pytorch | OpenCV | GitHub | C++ | Matlab, Simulink | Java

LANGUAGES

French, Arabic : Bilingual
English : C1

EDUCATION

ENSTA Paris

Engineering Degree, Robotics and autonomous systems

September 2023 – October 2024

- **Machine learning**, **navigation**, planning and control
- **3D Vision**, **SLAM**, **Deep Learning based computer vision**

Ecole Polytechnique X

Engineering Degree, Electrical engineering

September 2020 – October 2024

- Applied mathematics and computer science
- **Machine Learning**, **Reinforcement Learning**
- Electrical engineering

IPGEI de Nouakchott

Preparatory classes, MPSI/MP*

September 2018 – August 2020

- MPSI and MP*
- Admitted to France's top engineering schools: X, Mines-Ponts

Lycée militaire de Nouakchott

Baccalaureate in mathematics

September 2015 – August 2018

- Top scorer (**valedictorian**) for the Mauritanian baccalaureate of mathematics