

# AEROSPACE ENGINEERING STUDENT

FINAL-YEAR SPECIALIZED IN MECHATRONICS

SÉBASTIEN BOUSSAGUET

AVAILABLE FROM 2 FEBRUARY 2026 IN AUSTRALIA

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 Driving License

Aerospace Engineering student from France, specializing in **Mechatronics** and **Autonomous Systems**, with **hands-on experience in robotics, control systems, and embedded programming**. Currently seeking a **6-month internship in Australia**, preferably in **robotics**.

## EDUCATION

INSTITUT POLYTECHNIQUE DES SCIENCES AVANÇÉES, AERONAUTIC & SPACE SCHOOL

Paris, France

*Master of Science, Aeronautical engineering*

Sep 2021 - Currently

Major in Autonomous Aeronautical system

DONGGUK UNIVERSITY, EXCHANGE SEMESTER

Seoul, South Korea

*Specialization in Data Analysis and Business Negotiation*

Aug 2024 - Dec 2024

Intitut Emmanuel d'Alzon

Nîmes, France

*Vocational Diploma in Aeronautical Engineering (BTS, equivalent to an Associate Degree)*

Sep 2019 - Jul 2021

With honours

## EXPERIENCES

NEXTEAM OLEMPS MACHINING

Olemps, France

*Automation Technicien Intern*

Jun 2025 - Sep 2025

- Designed and analyzed electrical and pneumatic diagrams for industrial systems
- Developed and debugged LADDER logic programs (PLC programming)
- Planned, implemented, and tested automated systems
- Prepared and documented technical information and manuals

3 months

ACTI GROUP - ALMERAS

Rodez, France

*Aeronautical Technical Documentation Intern*

Jun 2021

- Assisted in the design and implementation of automated industrial systems
- Programmed and tested PLCs using LADDER logic
- Supported maintenance and troubleshooting of electrical and pneumatic circuits
- Created and updated technical documentation and user manuals

1 month

ACTI GROUP - ALMERAS

Rodez, France

*BTS Mechanical Engineering Intern*

Jun 2020

- Gained hands-on experience in machining processes and dimensional inspection of precision parts for the aeronautics and space sectors.
- Assisted in the verification of tolerances and quality control processes.
- Optimized workstation layout by reorganizing tools and equipment, improving workflow efficiency and reducing unnecessary movements.
- Contributed to the preparation of machining and inspection reports.

1 month

SOLEÍ

Rodez, France

**Workshop Laborer**

Jul 2023

- Assisted in the manufacturing of windows, verandas, and entrance doors.
- Handled material movement and workshop logistics.

1 month

MARIUS BONAL

Rodez, France

**Production Assistant**

Jul 2022

- Produced and labeled syrup for packaging.
- Ensured product quality and labeling accuracy.

1 month

# PROJECTS

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## LEO Space Video Intelligence (Hackathon)

Development of an end-to-end architecture for **real-time** video intelligence from a LEO satellite constellation, designed in only **24 hours** under strict **bandwidth**, latency, and **cybersecurity** constraints.

- Designed a 6-satellite constellation with **ground stations** and **onboard preprocessing** for prioritized downlink.
- Used GRAVES/HELIX orbit data to enhance **tracking** and **mission planning**.
- Defined key satellite needs (antenna, power, thermal) and delivered a unified **C2**-focused architecture.

We **won** the local round of the **Hackathon** in October 2025.

## Autonomous robot of exploration

Development of an **autonomous exploration robot** for **unknown environments** using **ROS2**. We use the **frontier method** and the **A\* algorithm** to optimize path planning.

- Adapted and extended existing codebase to implement custom algorithms and parameters.
- Tuned robot behavior and exploration strategy to improve efficiency in unknown environments.
- Collaborated with team members to integrate modules and test system performance.

## Bi-RRT path planning

Development of a **bidirectional Rapidly-exploring Random Tree** (Bi-RRT) algorithm to **efficiently find a path** between two target points.

- Designed data structures and logic to support bidirectional search efficiently.
- Analyzed algorithm performance and identified bottlenecks for optimization.
- Documented methodology and results for reproducibility and team use.

## Handwritten Digit Classification (MNIST)

Development of a **convolutional neural network** (CNN) to **classify handwritten digits**, including **data preprocessing, model training, and evaluation**.

- Learned and applied core concepts of machine learning and deep learning.
- Implemented classification techniques and performance metrics to assess model accuracy.
- Gained hands-on experience in data preprocessing, model evaluation, and algorithm tuning.

# SKILLS

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- Aerospace Engineering: Flight mechanics, Aircraft systems, Avionics, UAVs & Autonomous aerial systems
- Mechatronics & Control: Control systems, Autonomous robotics (A\*, frontier, Bi-RRT)
- Programming & Simulation: Python, MATLAB
- AI & Data: Machine Learning, Deep Learning, Data preprocessing, Algorithm tuning
- Engineering Practices: Simulation, Debugging, Lab & workshop experience, Technical documentation
- Problem-solving & analytical thinking
- Team collaboration & communication
- Rapid adaptation to new codebases
- Attention to detail & quality control
- Practical mindset & results orientation

# LANGUAGES

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- French *Fluent*
- English *Advanced-level (TOIEC - 895 pts)*

# HOBBIES

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- President of the climbing association at IPSA - *IPSA GRIMPE* 2023 - 2024
- Treasurer of the climbing association at IPSA - *IPSA GRIMPE* 2022 - 2023
- Climbing (6c+/7a, V5/V6)
- Ski
- Running (10K, half-marathon, marathon)
- Reading (Start with Why, 12 Rules for Life, The Mortal Instruments, Percy Jackson...)