BIECHE MATYS ADÉAS

Engineering Student in Mechatronic Systems and Autonomous Robotics

Experience with real-time control architectures and integration of sensor-based automation logic

EXPERIENCE

Robot Club de Toulon – RoboCup

Lead Engineer – Autonomous Robotics & Perception

2023 – Present | Toulon, France

- Participation in RoboCup (2024, 2025), Middle Size League.
- Lead development of autonomous robot subsystems: perception, decision-making, and actuation. Q-learning for gameplay optimisation. C# implementation.
- Engineering of a reliable ball-handling module using ToF-based grasp detection.
- Development of real-time perception algorithms: 3D LiDAR processing, OpenCV pipelines, SLAM, camera–LiDAR fusion for dynamic localisation and moving-object filtering. ICP-based SLAM and dataset refinement for YOLOv8n.
- Design of a stereo-vision proof of concept with dual JeVoisPro cameras; long-range ball detection (>20 m) with Kalman-based trajectory prediction.
- Contribution to Aqua.Bot 2024 (ROS2 USV): implementation of control laws and potential-field obstacle avoidance. Ranked 4th/20.
- Participation in SwarmZ 2024 (multi-drone coordination). Ranked 4th/16.
- Prototyping, mechanical integration (SolidWorks), embedded testing, and validation of mechatronic subsystems.

Tokyo University of Science

R&D Robotics Engineering Assistant

May 2025 – Aug. 2025 | Tokyo, Japan

- Design and fabrication of two functional underwater communication proof-of-concepts (< €200), delivered within 3 months.
- Development of a low-range acoustic communication system (1 kbps) and an AI-assisted optical communication module (OpenCV, Raspberry Pi, PyTorch) achieving 95.35% accuracy at 50 bps with 20% noise.
- Preparation of technical reports and weekly English-language presentations within a Japanese research team.

FIPATECH – French Robotics Cup 2026

ROS2 C++ Developer – Autonomous Systems

2025 – Present | Brest, France

- Development of a stochastic mission-planning module (Orienteering Problem solved with MPC), executed via a Behavior Tree architecture.
- Deployment on Jetson Orin RX under ROS2 (C++), interfacing with Nav2 and optimisation layers to improve mission robustness and success rate.
- Integration of a local LLM-based vision classifier for adversarial robot recognition using Intel RealSense d435i.
- Implementation of ArUco-based localisation on RealSense and Raspberry Pi platforms.

AeroTech

Drone System Architecture Lead

2023 – 2024 | Toulon, France

- System architecture, mechanical design, and construction of a tilt-rotor VTOL for the DASSAULT UAV Challenge (5th/20).
- Definition of system architecture, CatiaV5 mechanical design, Pixhawk integration, and dynamic modelling for autonomous flight control.
- Development of a lifebuoy detection module using OpenCV on Jetson Nano.

PROGRAMMING SKILLS

Python | C/C++ | C# | Java | SQL | HTML | CSS | Fortran

TOOLS & ENGINEERING ENVIRONMENTS

ROS/ROS2 | Gazebo | Docker | Git | Matlab | Simulink | Inventor | SolidWorks | CatiaV5 | KiCad | STM32CubeIDE | Computer Vision (OpenCV) | Sensor Fusion

LANGUAGE SKILLS

French – Mother tongue
English (C1) – TOEIC 975/990
German (C1) – Abitur 1.4 (German diploma)
Chinese (A1–A2) – Basic knowledge
Japanese (A1) – Basic knowledge

SELECTED ROBOTICS & AUTOMATION PROJECTS

- Fish Robot: Open-source autonomous fish robot for maritime monitoring. Embedded C++ control and perception.
- BlueROV: Autonomous underwater target-tracking platform (Visual Servoing, ROS2). Real-time robustness in low-visibility environments.
- Camera-Alignment System: Embedded sensor-fusion module integrating IMU + Kalman filtering for onboard camera calibration. (C)
- Eurobot Platform: Mechatronic design, embedded programming, and system integration of a fully autonomous holonomic robot. (C)
- Turtlebot: State-machine architecture with reactive obstacle avoidance under ROS (Python).

EDUCATION

ENSTA - IP Paris

Autonomous Robotics – Double Degree

2025–2027 | Brest, France

- Autonomous robotics, artificial intelligence, networked robotic systems.

SeaTech Engineering School Toulon

Mechatronic Systems

2023–2027 | Toulon, France

- Mechatronic systems, systems engineering, project management, finance.

Elite courses for Engineering Schools

CPGE – MPSI/MP

2020–2023 | La Réunion, France

OTHER

- NASA Open Science Certificate