

Jonathan Fouquet

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EDUCATION

- **Eidgenössische Technische Hochschule Zürich (ETHZ)** Zürich, Switzerland
Master of Science in Robotics, Systems and Control Sep 2026 – Present
- **Carnegie Mellon University (CMU)** Pittsburgh, USA
Exchange student in Mechanical Engineering and Robotics; GPA: 4.0/4.0 Jul 2025 – Jun 2026
- **Ecole Polytechnique Fédérale de Lausanne (EPFL)** Lausanne, Switzerland
Bachelor of Science in Mechanical Engineering; Grade: 5.36/6.00 Sep 2023 – Jun 2026
- **Lycée - Cité Scolaire Internationale Europole** Grenoble, France
German Baccalaureate (OIB), Graduated with highest honors 2020 – 2023

RELEVANT COURSEWORK

- General Robotics (4.0/4.0)
- Feedback Control Systems (4.0/4.0)
- Numerical Analysis (6.00/6.00)
- Probability Modeling (4.0/4.0)
- Image Analysis and Computer Vision
- Probabilistic Artificial Intelligence
- Robot Dynamics
- Model Predictive Control
- Dynamic Programming and Optimal Control

EXPERIENCE

- **Bosch Manufacturing Solutions** Stuttgart, Germany
Engineering & AI Intern – Special Machinery Construction May 2026 – Sep 2026
 - **Knowledge Management & AI:** Engineered a proof-of-concept RAG pipeline in Python to integrate LLMs into corporate workflows. Extracted and parsed data from Confluence and Jira, PDFs, and Excel using Requests, Pandas, and PyMuPDF. Embedded data into a ChromaDB vector database via LangChain and connected it to a FastAPI/Streamlit frontend. This modular architecture streamlined coworker support and boosted efficiency during the SAP S/4HANA transition.
 - **Hardware Design & Construction:** Engineered custom manufacturing equipment and detailed technical drawings. Developed advanced CAD models using Autodesk Inventor. Extensively utilized 3D printing to accelerate iterative testing and rapid prototyping for special machinery.
 - **Corporate Engineering & Problem Solving:** Operated within an agile engineering environment during a 5-month summer internship. Aligned project objectives during weekly interdisciplinary team meetings. Drove continuous improvement in workflows by applying formal structured problem-solving methodologies.
- **Virtual Traffic Lights** Pittsburgh, USA
Software Development Aug 2025 – Mar 2026
 - **API & Data Integrity (FastAPI):** Contributed to the development of an intelligent traffic monitoring platform focusing on full-stack data integrity. Implemented key backend API endpoints to secure critical data streams including Red Light Running incidents and historical vehicle turn counts.
 - **Frontend Development (React/TS):** Designed and integrated the corresponding frontend components providing dynamic visualization and analysis tools.
 - **Business insights:** Successfully translated raw traffic metrics into actionable business insights supporting decisions on urban planning and signal optimization.
 - **Tech Stack:** Python (FastAPI), JavaScript (TS, React), Docker
- **EPFL** Lausanne, Switzerland
Teaching Assistant Sep 2024 - Jul 2025
 - **Teaching assistant in Information, Computing and Communication:** Provided technical assistance for students' assignments (in C Programming) for Mechanical Engineering under Prof. Dan-Cristian Tomozei.
 - **Teaching assistant in Electrical Science and Technology:** Provided lab assistance, evaluated and graded assignments for Mechanical Engineering, Materials Engineering and Microengineering under Prof. Philippe Allenbach.

SELECTED PROJECTS

- **Robotics Coursework Projects — Python, Raspberry-Pi, CAD (Jan 2026 – May 2026):**
Developed multiple autonomous robotic systems focusing on distinct pillars of modern robotics. Engineered low-level control loops using PID and LQR for accurate actuation. Built navigation stacks utilizing odometry for localization and path planning, and implemented Computer Vision and neural networks for advanced perception tasks.
- **Inverted Pendulum Control — Python, MATLAB, Simulink (Sep 2025 – Dec 2025):**
Derived mathematical models for non-linear system dynamics and designed a PID controller using frequency domain analysis (Root Locus, Bode). Optimized control parameters to satisfy strict stability constraints (using manual pole placement and LQR). Designed a Kalman filter to tackle sensor noise and external disturbances.
- **Programming Project — C, Matlab, Labview (Sep 2024 – Dec 2024):**
Engineered a C and LabVIEW pipeline to extract and process oscilloscope data from images, automating signal reconstruction. Then developed a MATLAB algorithm for signal fitting and visualization.

ADDITIONAL SKILLS

- **Languages:** German (Native), French (Native), English (Proficient, C1 DET)
- **Software/Programming:** Python, C, C++, Matlab, CAD (Fusion 360, Inventor, CATIA), JavaScript, Labview, REST API, SAP, Git, Docker, Arduino, ESP32, Raspberry Pi
- **Tools:** Jira, Confluence, Teams, Microsoft Office Suite
- **Honors:** Dean's List Fall 2025, Dean's List Spring 2026, Severin B. Hacker Fellowship