




# Rachelle Elisabeth FABIAN


## Robotics & Embedded Systems | AI & Computer Vision Engineer (Python/PyTorch)

 Montreux, VAUD, Switzerland

Swiss Resident (Permit C) | Slovak National (EU Citizen) | Driving License (Cat. B) | 05.10.2002 (F)

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PROFESSIONAL SUMMARY


Engineering graduate with a strong foundation in computer vision, robotics, embedded systems, and AI-driven applications. Combining hands-on kinematics, control engineering and computer vision expertise. Experienced in Python, C++, ROS and PyTorch, with practical application of reinforcement learning concepts, trajectory optimisation, and simulation-to-real transfer on robotic platforms. Multilingual and multicultural, proactive, and passionate about using technology to solve real-world problems. In the past year I have advanced my robotics expertise through self-directed projects and applied research. Seeking an opportunity to contribute to AI-driven solutions with an innovative team while continuing to grow my skills in real-world environments.

EXPERIENCE / PROJECTS

Dissertation: “Identifying Weeds in a Field of Cultivated Crops” – Grade 88%

University of Sussex


 Mar 2023 – June 2024


 Brighton, UK

- Built a custom weed detection dataset using CVAT and Roboflow, with varied lighting/backgrounds.
- Developed YOLOv5/v8/v9 perception models in PyTorch, fine-tuned for real-time inference on embedded platforms; integrated into robotic pipelines for automatic object detection
- Applied augmentation and evaluation techniques to improve robustness in variable environments, using precision/recall and mAP metrics to validate deployment readiness.
- Validated model performance using `val.py` with custom IoU/confidence thresholds for deployment readiness.

Project: “Design of a 5-Bar Planar Parallel Robotic Solution”

University of Sussex


 Feb 2024 – May 2024


 Brighton, UK

- Designed, simulated, and implemented forward/inverse kinematic solution to 5-bar planar parallel manipulator for vision-guided pick and place.
- Implemented derived solution on smaller scale model using servo motors – Full MATLAB code, simulation files, and technical documentation available on GitHub (<https://github.com/rachoufbn/5-Bar-Planar-Robot>)

Project: Object Detection for Industrial UAV Application

Personal Project

 September 2025

 Montreux, CH

- Selected existing YOLO11 deep learning object detection model weighing out and documenting training process from model fine-tuning to hyperparameter selection.
- Developed the full pipeline of UAV image-based object detection from dataset interpretation and creation to deployment on UAVs through inference.py script.
- Documented full code in correct Git format through the use of “SourceTree” working with multiple branches of the project.
- Full Python project leveraging PyTorch and Ultralytics libraries, with multiple classes, requirements available on GitHub (<https://github.com/rachoufbn/probe-detection-with-deep-learning-yolo11>)

Founder – in formation

FBN Digital Solutions

 Oct 2024 – Present

 Montreux, CH

- Established an independent startup focused on AI-powered applications for automated data processing using LLMs. Collaborated with SMEs on full-stack projects expanding my expertise in AI-driven solutions & robotics.

OTHER EXPERIENCE

Committee Member – University of Sussex Snowsports Society

Sussex Snow

 May 2022 – June 2024

 Brighton, UK

- Led digital branding and member recruitment for largest university sport society (>250 members) Increased active social media engagement and following by 100% (1500 to 3000)
- Ran logistics for international ski trips and monthly competitions across the UK
- Designed and sold branded merchandise via Cognito forms platform

Waitress / Barista

Si Signore

 Oct 2021 – Mar 2022


 Brighton, UK


- Delivered high-quality service in a fast-paced, customer-facing environment, honing strong communication, problem-solving skills, and attention to detail.

EDUCATION

Bachelor of Engineering (BEng) in Electrical & Electronic Engineering with Robotics (Mechatronics)

University of Sussex


 Sep 2020 – Jul 2024


 Brighton, UK

- Grade: Upper Second Class Degree (2:1) | Dissertation Grade: 88%

International Baccalaureate Diploma Programme (IBDP) + IGCSE

St. George's International School

 Aug 2014 – Jul 2020

 Montreux, CH

- Bilingual Diploma Awarded | HL: Physics, Mathematics, Computer Science
- IGCSE (Distinction) | 11 IGCSEs at A\* to B

LANGUAGES

English + French	(Bilingual/Native)
German	(Limited Working)
Spanish	(Intermediate)
Slovak	(Intermediate)

TECHNICAL SKILLS

**Programming:** C++, Python, Java, C, MATLAB, cmake, (basic JavaScript and HTML), Git

**Frameworks & Tools:** PyTorch, YOLO11, Roboflow, CVAT, Simulink, Embedded Systems

**Skills:** Computer Vision, Robotics (dynamics & kinematics), Control Engineering, OOP

**Other:** Adobe Suite, MS Office Suite

INTERESTS

- Competitive Swimming (Montreux Natation – Nationals Qualified)
- Outdoor sports: skiing, hiking, water sports, cycling, horse riding
- Travel & cultural exchange
- Photography & Videography

CERTIFICATIONS

IBM Full Stack Software Developer Professional Certificate (ongoing)