



Aly Elbindary

Robotics Engineer

- May 1, 2000
- Lausanne, Switzerland
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- Swiss Residency (Permis B)

Education

Master in Robotics along with a Minor in Data Science at École Polytechnique Fédérale de Lausanne (EPFL) :
Major specializing in mobile robotics. Studies in AI, Machine Learning, Control Systems and robotics. | 2022 - current

Bachelor of Engineering at École Polytechnique Fédérale de Lausanne (EPFL) :

Major in Microengineering. Studies in programming, digital systems design, microcontrollers, electronics, microfabrication, mechanism designs. | 2018 – 2022

French Baccalaureate S (Scientific)
at Lycée Français du Caire | 2018

Skills

- Programming : Proficient in C, C++, python, pytorch, MatLab and Assembly
- Software : AutoCAD (CATIA), Logisim & Quartus Prime (digital system design)

Languages

	A2	B1	B2	C1	C2
English	●	●	●	●	●
French	●	●	●	●	●
Arabic	●	●	●	●	●
Spanish	●	●	●	●	●

Work Experience

- | | | |
|------------------|---|------|
| September 2024 - | Internship at CHUV (.NeuroRestore Lab) | CHUV |
| | Modeling cardiovascular instability in people with spinal cord injury. | |
| February 2025 | Analysis of various clinical data, such as blood pressure and heart rate, to extract important features. Usage of different machine learning models to predict the presence of hypotension. | |

Master Thesis

- | | | |
|------------------|---|------|
| September 2025 - | Incorporation of Computer Vision in Abdominal MRI Scans at the CIBM PCI Lab – Perfect Grade 6/6 | EPFL |
| February 2026 | Developed AI-based Dixon MRI segmentation to track volumetric and water-fat changes in subcutaneous rat implants over time, creating quantitative biomarkers for preclinical regenerative medicine studies. Usage of latest state-of-the-art vision transformers. | |

Publications

O. Z., Aly Elbindary et al.

"Improved Monitoring of Injectable Biomaterial Implants in Rats Using Dixon-TurboRARE MRI at 9.4T"

ISMRM-ISMRT Annual Meeting and Exhibition, Cape Town, South Africa, May 2026. Accepted abstract. [URL](#)

Projects

Automatic Segmentation of Light-Sheet Zebrafish Scans

- Semester Project in MICROBS lab at EPFL : Use machine learning segmentation techniques to automatically segment light-sheet scans.
- Key Concepts : Computer Vision, Use and Fine-tuning of preexisting state-of-the-art models (SAM), coding with **python and pytorch**, focal loss, cross-entropy loss, intersection over union (IoU), multiclass segmentation.

Create an AI ChatBot Specialized to course content at EPFL

- Use Modern Natural Language Processing techniques in order to develop a specialized tutor-ChatBot through python, pytorch, and state-of-the-art models such as T5, LLaMA.
- Key Concepts : NLP, RLHF, DPO training, dataset collection & labeling, preference dataset, improvement methods (RAG & Quantization).

Tweet Sentiment Classification

- Create a **machine learning model** that can perform binary classification (positive/negative sentiment) on a given dataset of tweets.
- Achieved the **Highest Accuracy Score (92.1%)** in the Class
- Key concepts : Tokenizing/encoding a text dataset (TF-IDF, GloVe), use of pre-existing state-of-the-art transformers (BERTWEET), ethics of machine-learning.

2D Animal Pose Detection for the Autopilot of an Autonomous Vehicle

- Implementation of one of Tesla's autopilot features : 2D Animal Pose Detection.
- Contribution : Improving a preexisting model (OpenPifPaf) through Semantic Data Augmentation (SDA).
- Key concepts : ML, AI, perception, prediction, planning, neural networks (NN), convolutional NNs, recurrent NNs, regularisation techniques, supervised learning.

Programming a quadrotor drone to complete an obstacle course

- Coding using Python, in both simulation and hardware.
- Key concepts : path planning, obstacle avoidance, drone navigation and target detection, **sensor usage**.