

# AHMED ABDELMALEK

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*"Simplicity is deceptively complicated."*

Data Science Master student at EPFL.

## EDUCATION

École polytechnique fédérale de Lausanne, MSc major in Data Science, minor in Cybersecurity   Lausanne, CH	2024 - Today
École polytechnique fédérale de Lausanne, BSc in Communication Systems   Lausanne, CH	2021 - 2024

## EXPERIENCE

Swiss Solar Boat, Member of the Electronic Hardware Team   Lausanne, CH	Sept 2023 - Feb 2024
• Used C++ to test sensors before connecting them to the boat's electronic system.	
UBCI, Engineer Intern   Tunis, Tunisia	Feb 2021 - Feb 2021
• Internship in IT systems management	

## SKILLS

Programming Languages Go, Python, C/C++, Java, R, SQL, VHDL, Assembly, Scala  
Tools and Technologies Git, LaTeX, ROS2, Arduino, Linux, OpenCV, VSCode

## Projects

Predictive Analysis of Movie Box Office Success	Sep 2024 - Jan 2025
• Conducted a data-driven analysis of the CMU Movie Summary Corpus to find key factors influencing box office revenue.	
• Preprocessed and cleaned large-scale movie metadata, integrating additional datasets to enhance predictive accuracy.	
• Performed exploratory data analysis using visualizations and statistical methods.	
• Developed predictive models to forecast movie success based on chosen features.	
• Built an interactive data story website, featuring dynamic visualizations.	
Decentralized NameCoin System on Peerster Network	Sep 2024 - Jan 2025
• Implemented a peer-to-peer communication and integrated a gossip protocol for message broadcasting and private messaging using a custom UDP socket.	
• Implemented a Paxos-based naming consensus system and blockchain for global agreement, leveraging cryptographic techniques for security.	
• Built blockchain functionalities including transactions, proof-of-work consensus, and robust domain management.	
• Conducted extensive testing (unit, integration, performance) to ensure system correctness, scalability, and security.	
Road Segmentation from Satellite Imagery Using Deep Learning	Nov 2024 - Dec 2025
• Developed and compared state-of-the-art deep learning models (RFE-LinkNet, ResNet, DeepLabV3) for semantic segmentation of roads in satellite imagery.	
• Preprocessed and augmented datasets to enhance model generalization.	
• Implemented custom training pipelines with Dice loss, cross-entropy loss, and Adam optimizer.	
Predicting Coronary Heart Disease Risk Using Machine Learning	Sep 2024 - Oct 2024
• Developed predictive models to assess coronary heart disease risk using the Behavioral Risk Factor Surveillance System (BRFSS) dataset.	
• Implemented and optimized machine learning algorithms from scratch.	
• Conducted extensive data preprocessing to improve model performance.	
Simulation and Source Detection of Infectious Processes on Networks	Feb 2024 - June 2024
• Used graph-based models to simulate infectious disease spread and identify outbreak sources using centrality measures.	
• Analyzed epidemiological metrics using differential equations and stochastic modeling.	
• Enhanced model realism by incorporating stochastic elements, improving prediction accuracy.	
Real-Time SLAM with Radar	Feb 2024 - June 2024
• Designed and implemented a real-time SLAM system using ROS2 and TurtleBot4 IMU for odometry data.	
• Captured and processed radar data for real-time environment mapping and object tracking.	
• Optimized point cloud data to reduce noise and improve system accuracy.	
• Conducted comparative analysis against deep learning-based odometry methods.	

**Snake Game in Assembly Language**

Sep 2023

- Developed the Snake game in Assembly and load it onto an FPGA using Quartus and VHDL, running on a Nios II processor.

**JaVelo: Bicycle Route Planner in Java**

Feb 2022 - Jun 2022

- Developed a user interface bicycle route planner for Switzerland with interactive map controls and detailed statistics, using Java and JavaFX.
- Integrated SwissALTI3D elevation data from swisstopo to provide accurate terrain information for cyclists.

**CERTIFICATIONS**

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French Baccalaureate highest honors

**Languages**

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English	Professional proficiency
French	Native proficiency
Arabic	Native proficiency

**VOLUNTEERING**

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**International Relations Specialist | Interact: Rotary Sponsored Club**

Jul 2019 - Jun 2020

- Focused on the strategy to strengthen relationships between our club and other international organizations, leading to collaborations and partnerships with new ones.
- Gained visibility on various motivating perspectives for future development through transnational associations.

**Secretary General | Interact: Rotary Sponsored Club**

Jul 2018 - Jun 2019

- Enhanced language skills and organizational abilities.
- Gathered and analyzed necessary information, selected appropriate media for information transmission, and provided detailed strategic reports.