Ismail Ben seddik

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Education

Indiana University Bloomington, Master of Science in Computer Science — Aug 2023 – May 2025

- Fulbright Scholarship
- GPA: 3.93/4.0
- **Relevant Coursework:** Elements of AI, Applied Machine Learning, Deep Learning Systems, Engineering Cloud Computing, Foundations of Large Language Models

Al Akhawayn University in Ifrane, Bachelor of Science in Computer Science — Sept 2018 – May 2022

- Minor: Business Administration
- GPA: 3.78/4.0
- Honors & Awards: Merit Scholarship, President's List, Dean's List
- **Relevant Coursework:** Linear Algebra, Calculus, Probability and Statistics, Big Data, Distributed Systems, Artificial Intelligence

Publication

EmoPAtt-Lite: Lightweight Facial Emotion Recognition — EmoPAtt-Lite

- First Author, International Conference on Information Technology and Applications (ICITA), 2025
- Accepted for publication in *Springer Lecture Notes in Networks and Systems*
- Achieved 79.35% accuracy on FER2013 with only 1.3M parameters using novel attention mechanisms

Research & Teaching Experience

Research Engineer — Data Analyst, Bioinformatics Lab, Mohammed VI Polytechnic University (UM6P) – Benguerir, Morocco — Nov 2025 – Present

- Investigating transfer learning and partial domain adaptation methods for field-scale yield prediction in low-data agricultural regions.
- Designing scalable ML pipelines (MLflow, Airflow, MinIO, Hive) to integrate multimodal data sources for field-level fertilizer recommendation.

Computer Science Instructor, Coding Mind Academy – Remote, USA — Jun 2024 – Present

- Teaching computer science courses, such as American Computer Science League (ACSL), and Artificial Intelligence, to students from diverse age groups and backgrounds.
- Designing comprehensive curricula, courses, and instructional materials tailored to various computer science topics.

Associate Instructor, Indiana University – Bloomington, IN, USA — Aug 2024 – May 2025

- Taught Pervasive Computing and Modeling & Simulation courses.
- Led lab and class sessions, developed course materials, and mentored students.
- Tools: React Native, Flutter, Figma, Firebase, Arduino, C++, LAMMPS, GROMACS, OVITO

AI Engineer, Vehicle Autonomy and Intelligence Lab, Indiana University – Bloomington, IN, USA — Oct 2023 – May 2024

- Implemented state estimation algorithms for autonomous racing vehicles.
- Gained hands-on experience with sensor fusion (IMU, GNSS, LiDAR) and real-time robotics systems.
- Experience with embodied AI bridging perception and action informs my work on cognitive wearables.

Founder and Lead Instructor, CS Academy – Casablanca, Morocco Oct 2022 – Present

- Designing and delivering advanced CS curricula; piloted pedagogical methods informed by learning science research.

Chemistry and Physics Teaching Assistant, Al Akhawayn University – Ifrane, Morocco Jan 2020 – May 2022

- Led laboratory sessions and assisted with grading, proctoring, and student guidance.

Selected Projects

PODSAGE: Story-Driven AI for Enhanced Learning, Comprehension, and Retention PODSAGE

- Built a multimodal AI system that transforms complex concepts into interactive, persona-aware narratives using LLaMA 3.3, RAG, and ElevenLabs, with features like adaptive personalization, credible citations, and support for neurodivergent learners
- Finalist, Cheng Wu Innovation Challenge – Indiana University
- *Ollama (LLaMA 3.3), PyTorch, RAG, ElevenLabs, DeepFloyd IF, Flutter, FastAPI, Spring Boot*

High-Fidelity Image Reconstruction from Brain Activity neural-image-reconstruction

- Reconstructed high-resolution images from fMRI data using latent diffusion models (Versatile Diffusion), integrating VDVAE-derived latent representations into the diffusion process and leveraging CLIP for vision–language alignment
- *Python, PyTorch, VDVAE, CLIP, Versatile Diffusion*

Curriculum Learning for Natural Language Understanding curriculum-learning-for-NLU

- Reproduced the results of the IEEE/ACM Transactions on Audio, Speech, and Language Processing paper, Curriculum Learning for Natural Language Understanding, demonstrating the effectiveness of curriculum learning in improving the performance of the BERT language model on NLU tasks
- *Python, PyTorch*

Modeling Rock Classification Using Deep Learning and Psychological Frameworks rocks-classification-NNvsMan

- Designed a CNN to predict Multidimensional Scaling coordinates for rock images, capturing psychological feature spaces from human similarity judgments, which were subsequently integrated into the Generalized Context Model to predict human categorization behavior, based on the study "Using Deep-Learning Representations of Complex Natural Stimuli as Input to Psychological Models of Classification"
- *scikit-learn, Keras, Tensorflow*

bareOS: Lightweight Operating System bareOS

- Implemented a streamlined operating system incorporating modular features such as TTY support, thread scheduling, and a filesystem
- *C, QEMU*

High-Level Programming Language and its Compiler hlpl-and-its-compiler

- Designed and developed a high-level procedural programming language with a complete compiler, including a virtual machine with custom machine code and instruction sets, a lexer, parser, static semantics analyzer, and target code generator
- *C, Python*

Industry Experience

Software Engineer, Hightech Payment Systems – Casablanca, Morocco Sept 2022 – Aug 2023

- Designed, developed, and tested features for business groups and networks (e.g., Mastercard) using C, PL/SQL, Oracle, Unix, and Jenkins.
- Improved system reliability by designing fault-tolerant architectures and debugging critical failures.

Software Engineer Intern, Renault Group – Casablanca, Morocco Feb 2022 – May 2022

- Designed and built a cross-platform digital wallet mobile application using React Native, Spring Boot, PostgreSQL, Docker, Kubernetes, GitLab CI/CD, and Google Cloud Platform.
- Ensured high-quality product delivery by adhering to the Scrum framework and applying cutting-edge UX design principles.

Automation Engineer Intern, Renault Group – Casablanca, Morocco Jul 2021 – Sept 2021

- Built a chatbot and support automation system using Dialogflow and Selenium.
- Designed a web support platform using Django and jQuery.

Full Stack Web Developer Intern, Toubib.ma – Casablanca, Morocco Jun 2020 – Aug 2020

- Developed a REST API and geolocation features using Django and GeoDjango.
- Implemented scheduling and dashboard functionalities for patients.

Activities

Vice President of the Fulbright Association, Indiana University Apr 2024 – May 2025

Head of the Computer Science Committee, Arrachad Association in Meknes Jan 2022 – Aug 2023

Software Engineer, Al Akhawayn University's Mechatronics Team Dec 2019 – Mar 2020

Skills

Machine Learning & AI: PyTorch, TensorFlow, scikit-learn, diffusion models, Transformers, Hugging Face, NLTK, spaCy

Neuro & Cognitive Modeling: fMRI/EEG data analysis, CLIP, VDVAE, latent diffusion

Programming Languages: Python, C, C++, Java, PL/SQL, JavaScript

Scientific Computing & Data Analysis: NumPy, SciPy, Pandas, Matplotlib, JAX, MATLAB

Robotics & Perception: ROS, OpenCV, Sensor Fusion (IMU, GNSS, LiDAR)

Systems & Cloud: PostgreSQL, MongoDB, Docker, Kubernetes, Azure, GCP, AWS, Firebase, Git, Unix/Linux

Web Development: Django, Spring, Flask, FastAPI, Node.js, React, React Native, Flutter

Languages

Arabic (Native) • English (Fluent) • French (Fluent) • Spanish (Beginner)

Certificates & Honors

Software Security, University of Maryland – Coursera 2024

Distributed Programming in Java, Rice University – Coursera 2021

Big Data Integration and Processing, University of California San Diego – Coursera 2021

Data Analysis Track – Udacity 2020

Academic Excellence Award, National Association of Land Conservation, Land Registry and Mapping – Morocco 2019