

Mohamed Mehdi BOURAHLA

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OBJECTIVE: Machine Learning Engineer and Fulbright Scholar with expertise in building production-scale AI systems, deep learning architectures, and scalable software solutions. Proven track record of developing innovative ML applications from research to deployment, leading technical teams, and delivering impactful solutions across healthcare, research, and enterprise domains. Trilingual professional with strong cross-cultural communication skills.

EDUCATION

Artificial Intelligence — *Master of Science*

AUG 2022 - DEC 2023

University of North Carolina at Charlotte, USA

GPA: 3.75

- Awarded the prestigious Fulbright Scholarship to pursue graduate studies in Artificial Intelligence.
- Specialized in deep learning architectures and large language models with focus on robustness and scalability.

Software Engineering — *Master of Science*

SEP 2018 - SEP 2020

University of Blida, Algeria

GPA: 3.5

- Led technical workshops on machine learning frameworks and open-source development practices.

WORK EXPERIENCE

Senior AI Engineer / CTO — *Infinitgraph.ai*

JULY 2024 - PRESENT

- Built production research intelligence platform processing 100K+ academic abstracts, implementing semantic search with **Qdrant** vector databases and custom embedding pipelines.
- Engineered conversational AI research assistant using **FastAPI**, context-aware query processing, and multi-step execution planning, reducing academic research discovery time.
- Deployed scalable MLOps infrastructure on **Google Cloud Run** with **Docker** containerization, **Redis** caching, and automated failover systems.

Machine Learning Engineer — *Charlotte Machine Learning Lab*

AUG 2022 - JULY 2024

- Led end-to-end development of machine learning systems using **PyTorch** and **scikit-learn**, achieving 89.90% accuracy through ensemble methods and deep learning architectures.
- Architected scalable ML pipelines using **Docker** and **AWS**, processing complex multimodal sensor data with 88.47% accuracy for healthcare applications.
- Implemented domain adaptation techniques and **Transformer** architectures for audio classification, creating robust experimentation frameworks.
- Co-authored peer-reviewed study "SocialBit: Validation of a Lightweight Machine Learning Algorithm for Measuring Social Interactions" demonstrating value as a digital biomarker.

Acile — *Lead Software Engineer*

APR 2021 - JUL 2022

- Spearheaded development of marketplace platform connecting 500+ brands with 30,000 points of sale, architecting full-stack solutions using **Python**, **Odoo**, and **Vue.js**.
- Led cross-functional team of 5 developers, implementing **Agile** methodologies and **CI/CD** pipelines while establishing DevOps practices for enhanced reliability.
- Designed scalable microservices architecture resulting in 40% improved system performance and 99.9% uptime through strategic cloud implementation.

Research Engineer — *Research Centre for Scientific and Technical Information*

NOV 2019 - DEC 2020

- Developed novel sign language recognition system using WiFi Channel State Information and deep learning, achieving 99.71% accuracy for word-level recognition in smart home environments.
- Designed and implemented CNN+LSTM and ConvLSTM architectures using **TensorFlow/Keras**, deployed with **TensorFlow Serving** and demonstrated through web application.

SELECTED PROJECTS

Project Lead — *AI-Powered Research Platform*

OCT 2024 - PRESENT

- Architected full-stack research intelligence system processing 3 vector databases with **FastAPI** backend, enabling semantic search across 100K+ academic abstracts.
- Built production-grade MLOps pipeline on **Google Cloud Run** with context-aware query processing and multi-step execution planning.

Main Developer — *Healthcare Data Verification Platform*

JAN 2025 - MAY 2025

- Developed full-stack **React** and **FastAPI** application managing 1000+ physician records with real-time verification tracking and automated data validation workflows.
- Built advanced search/filtering system with batch operations interface, reducing manual review time significantly.

Developer — *SocialBit: Smartwatch-Based Social Interaction Detection*

Nov 2022 - July 2024

- Designed Domain Adaptive Ensemble Learning system for social interaction detection from smartwatch audio data, achieving 88% balanced accuracy on stroke patient datasets.
- Engineered scalable data pipelines using dual-path architectures (YAMNet + Transformer/LSTM) processing 11,573 audio samples for healthcare applications.

SPEAKING ENGAGEMENTS & LEADERSHIP

AI Coaching and Technical Support for Startups

December 2024

AI Expert with GIZ GmbH

African Startup Conference 2024

Provided bilingual AI coaching to 20+ startups on AI adoption, integration strategies, and digital innovation.

Introduction to Artificial Intelligence Program

2025

Lead Instructor

U.S. Embassy Algiers - American Cultural Center

Led AI literacy program training diverse audiences including teachers, medical providers, students, and policymakers on AI fundamentals and responsible adoption.

Latest Developments in AI: A Survey

November 2024

Guest Speaker & Panelist

Algeria 2.0 Conference

Presented emerging AI trends and technologies to 200+ attendees, discussing practical applications and future opportunities.

TECHNICAL SKILLS

Machine Learning: PyTorch, TensorFlow, Scikit-Learn, Transformers, LSTM, BiLSTM, RAG Systems
Programming: Python, C++, JavaScript, SQL, Bash
Cloud & Infrastructure: Docker, Kubernetes, AWS, GCP, Azure, CI/CD
Web Development: FastAPI, Flask, React, Vue.js, RESTful APIs
Databases: MongoDB, PostgreSQL, SQLAlchemy, Redis, Vector Databases (Qdrant, FAISS)
Data Science: Pandas, NumPy, Matplotlib, Seaborn, Data Visualization

LANGUAGES

Arabic (Native), French (Native), English (Proficient - IELTS 7.0, TOEFL 88)