Hamza Berahma

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EDUCATION

Al Akhawayn University in Ifrane — Ifrane, Morocco
Bachelor of Science in Computer Science, Minor in Mathematics; GPA: 3.98/4.00 — *Expected May 2028*
- Received Full Merit Scholarship and Excellence Award (Top 10 Students); University Honors Program

EXPERIENCE

Peer Tutor – Data Structures & Algorithms — Ifrane, Morocco
Center for Learning Excellence, Al Akhawayn University — *Sep 2025 – Present*
- Led tutoring for 100+ students in CS/Math, delivering 200+ hours of workshops, boosting grades by 20%
- Designed LaTeX-based handouts and personalized learning paths for complex algorithms

Quantitative Financial Analyst Intern — Casablanca, Morocco
Attijariwafa Bank — *Aug 2025 – Sep 2025*
- Developed Python-based fuzzy logic models for market analysis, cutting manual processing by 30%
- Created data-driven PowerPoint reports, influencing strategic investment decisions

Quantum Computing Research Intern — Ifrane, Morocco
Undergraduate Research School, Al Akhawayn University — *May 2025 – Jul 2025*
- Engineered Double DQN quantum routing algorithm in Python, achieving 98.7% success rate at 87% fidelity on NSFNET
- Co-authored *QuantumRoute* preprint and presented findings at AUI Research Symposium

PROJECTS

COMET: Intelligent Flowchart Grading System | *Python, PyTorch, ANTLR, PostgreSQL* — 2024
- Automated grading for 5000+ flowchart submissions/semester with 95%+ accuracy using ML
- Parsed visual logic into CFGs/ASTs; built interpreter for I/O tracing and symbolic grading
- Implemented graph-based anti-cheat module with structural clustering, reducing plagiarism by 40%

SILENCIO: Embedded Noise Localization Platform | *ESP32, C, TinyML, Signal Processing* — 2024
- Developed real-time acoustic system on ESP32, achieving 1m localization accuracy and 50% noise reduction
- Optimized FFT/TDoA pipeline for 200ms latency and 100KB RAM usage
- Designed custom protocol for distributed clock synchronization with 5ms jitter

ORION: Decentralized Academic Sharing Network | *SvelteKit, Node.js, IPFS, Zero-Knowledge Proofs* — 2024
- Built censorship-resistant platform with ZK-based identity, scaling to 100+ GB of academic content
- Integrated Canvas API and Selenium for course data extraction, supporting 5000+ users and 150+ faculty
- Deployed encrypted metadata distribution via IPFS/libp2p for secure, scalable access

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Java, JavaScript, TypeScript, SQL, R
Frameworks & Libraries: PyTorch, scikit-learn, FastAPI, Node.js, React, SvelteKit, ANTLR, OpenCV
Tools & Platforms: Git, Docker, Google Cloud, AWS, TravisCI, IPFS, NetSquid, PostgreSQL, Selenium
Embedded Systems: ESP32, TinyML, FreeRTOS, FFT, TDoA, Low-Level C

LEADERSHIP & SERVICE

Board Member: Student Undergraduate Research Council, Al Akhawayn University; Secured funding for 10+ research projects
President: AUI Press; Launched student-led academic journal, publishing 20+ articles
Vice President: IEEE Student Branch, Al Akhawayn University; Organized 5+ tech workshops for 200+ students
Volunteer Tutor: Hand in Hand Initiative & School House Tutoring; Mentored 50+ students in STEM