MONCEF BOUSSELAT

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EDUCATION

Master's degree in Networking and Cloud Computing   Sep. 2023 – Present

Lorraine University | Leeds Beckett University | Lulea Technical University   *Nancy, FR | Leeds, UK | Skelleftea, SE*

- Selected among 23 out of 2000+ applicants for a fully-funded Erasmus Mundus scholarship
- Pursuing a joint master's degree between UL (France), LBU (UK) and LTU (Sweden).

Master's degree in Data Science and AI   Sep. 2018 – Jul. 2023

National Polytechnic School   *Algiers, Algeria*

- Selected from the top 10% students of the country's preparatory schools through a national contest
- Graduated with a grade of 17.5/20 and a "very good" mention.

EXPERIENCE

Cloud Development Intern   Dec 2024 – Present

Lorraine University   *Nancy, France*

- Conducting research on the design and implementation of a decentralized blockchain-based system for secure and efficient identity information sharing in cloud environments
- Developing a prototype of the proposed system using Hyperledger Indy, Kubernetes and AWS services
- Evaluating the performance and scalability of the system through extensive testing and analysis

Full-Stack/Cloud Developer Intern   Jan 2023 – Jul 2023

Schlumberger   *Algiers, Algeria*

- Engineered a REST API, enabling the import/export team to store 1000+ daily transaction records on a private blockchain
- Developed a full-stack web application using Flask, VueJS, and Hyperledger Fabric; containerized the application using Docker and orchestrated deployment on AWS ECS, ensuring scalability for 500+ users
- Solved the problem of lost imported assets which was costing up to 4x of the assets' original values in penalties

Data and AI Intern   Oct. 2022 – Jan. 2023

Ericsson   *Algiers, Algeria*

- Implemented image-recognition models using YOLO to assist field workers with device identification, achieving a classification accuracy of over 85%
- Built and trained a convolutional autoencoder for image denoising in PyTorch, which reached a 99% reconstruction accuracy on the MNIST dataset

Data Analyst Intern   May. 2022 – Jul. 2022

BH Advisory   *Algiers, Algeria*

- Conducted a monitoring mission on the construction materials market to identify price and availability trends and patterns
- Built web scrapers to automate data collection from company websites and showcased it on a VueJS dashboard

PROJECTS

Auto-scaled AWS Infrastructure with Terraform | *AWS, Terraform, Java*   Jan. 2025

- Designed JADE agents to DDoS a server, hosted on EC2 machines capable of spawning 20,000+ instances in under 30s
- Deployed a scalable infrastructure with Terraform to react to intense attacks by ensuring that CPU usage is always below 50%
- Built a front-end application using VueJS and the AWS SDK to monitor CloudWatch metrics on the attacked servers

Distributed System Fault Tolerance Mechanisms with Kubernetes | *Bash, Docker, Kubernetes, Prometheus* | GitHub   Nov. 2024

- Deployed a Python application on Docker containers orchestrated with Kubernetes' HPA based on CPU usage, allowing the system to scale for a load of 30%
- Conducted stress-test attacks through infinite cURL request loops to evaluate the system's scalability and self-healing capabilities, achieved 99% availability
- Leveraged Prometheus to monitor and analyze resource utilization in real-time

Machine Learning for Drinking Water Quality Evaluation | *Python, PyTorch*   May. 2024

- Trained different machine and deep learning models to assess the drinkability of water samples based on their chemical properties

Benchmarking GPU Energy Consumption for Training Neural Networks | *Python, PyTorch, Bash*   Apr. 2024

- Wrote a GPU profiling tool, which runs training tasks for 25+ hyper-parameters combinations to explore the effect of each on energy consumption
- Achieved best accuracy in the parameter pool with 20% energy savings

Cloud and IoT-based Classroom Provider | *Python, Arduino, MongoDB, MQTT, AWS*   Nov. 2023

- Launched an app on AWS EC2 to collect and log room data from Arduino devices (temperature, noise, lighting…) to MongoDB in order to provide the student with the classroom that best matches their criteria through a tailored decision making algorithm

Business Game | *VueJS, Laravel, Docker* <div align="right">Dec. 2020 - Apr. 2023</div>
- Led the development team of a student club to build and improve a market simulation software for two consecutive editions of the "Business Game" event
- Optimized and balanced traffic for 12 playing teams averaging 1000 requests per minute on local servers

NEAT algorithm applied to video games | *Python, NEAT-Python, Pygame* | GitHub <div align="right">Oct. 2022</div>
- Reconstructed 1:1 replicas of popular games such as Flappy Bird and Snake using Pygame
- Trained agents leveraging neuro-evolution algorithms (NEAT), performing better than 100% of human players tested against

Wildfire 3D Simulator | *Unity, C#, Python, Google Earth Engine* | GitHub | ResearchGate <div align="right">Dec. 2021</div>
- Collected and segmented Google satellite imagery with machine learning (k-means) and reconstructed the 3D terrain in Unity
- Simulated forest wildfire spread on a 100km² area through a semi-empirical cellular-automata model

Focus AI | *Python, PyTorch, OpenCV, MediaPipe* | GitHub <div align="right">Nov. 2021</div>
- Tuned a face tracking deep learning model for focus monitoring, notifying users' when focus loss is detected
- Logged results showed up to 50% increase in focus and productivity of monitored users

Online Store scraper | *Python, Selenium* | GitHub <div align="right">Apr. 2021</div>
- Built web scrapers for several online stores (Amazon, CDiscount, Materiel.net) with price logging and comparison over time
- Multi-site comparison offered an average of 15% in cost savings on a selection of products

ADDITIONAL

Programming Languages: Python, C/C++, C#, SQL (MySQL), PHP, JavaScript, HTML/CSS, BASH
Cloud & DevOps Tools: AWS (EC2, S3, VPC, CloudWatch, ECS, CloudFront), Terraform, Docker, Kubernetes (MiniKube), Git, GitHub (GitHub Actions), Prometheus
Development Tools: VueJS, Node.js, Flask, Laravel, ExpressJS
Data Science & Machine Learning Tools: NumPy, Pandas, Matplotlib, Seaborn, PyTorch, Scikit-learn, Tensorflow, Anaconda
Awards and Certifications: Arctic Challenge Hackathon Winner (2024), Algerian Engineering Competition Winner (2021), Google DevFest 21 Hackathon Winner (2021)
Languages: English (C2), French (C2), Arabic (Native)