Dhieddine BARHOUMI

Artificial Intelligence Engineer

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Education

National Engineer's Degree in Computer Science — September. 2020 – Present
National Institute of Applied Sciences and Technology (INSAT) — *Tunis, TN*

Relevant Courses: *Linear Algebra, Database Management, Algorithms and Data Structures, Deep Learning, NLP, Cloud Computing, Big Data, Optimization Methods, Reinforcement Learning*

Scientific Baccalaureate — September. 2017 – June 2020
Pioneer High School Hammam-Lif — *Ben Arous, TN*

Top 5% of bachelors with an excellent average grade.

Experience

AI Research Intern — March. 2025 – August. 2025
Institute For Machine Learning And Analytics (Hochschule Offenburg) — *Offenburg, DE*

- Selected as a DAAD KOSPIE Scholar for advanced AI research in autonomous driving.
- Developed sensor fusion models integrating LiDAR and cameras for enhanced perception.
- Implemented transformer-based deep learning to improve scene understanding.
- Simulated AI-driven perception in CARLA, refining models before real-world testing.
- Optimized multi-modal pipelines for better AI performance across diverse driving conditions.
- Trained and fine-tuned AI models using high-performance GPUs for real-time processing.
- Upon completion of this six-month internship, I will graduate.
- **Skills:** Sensor Fusion, Deep Learning, Transformers, CARLA, ROS2, PyTorch, Computer Vision, AI Optimization

AI in Security Systems Intern — June. 2024 – August. 2024
All Points Smart Solutions — *Amman, JO*

- Designed and implemented advanced AI security systems for historic sites including Ajloun Castle and Amman Citadel, enhancing real-time threat detection capabilities and reducing response time to incidents by 40%.
- Enhanced ANPR Accuracy by 20%, optimizing recognition for high-speed and low-light conditions on major streets in Amman.
- Integrated AI Models with Milestone VMS for intelligent object detection and motion tracking, automating alerts and cutting false alarms by 30%.
- Tested AI Surveillance Solutions for diverse environments, refining system adaptability.
- Adapted to International Work Environment, gaining experience in cross-cultural collaboration and project execution.
- **Skills:** AI Surveillance, ANPR, Computer Vision, Deep Learning, Python, Project Coordination, Resource Management

Computer Vision Intern — June. 2023 – July. 2023
DidaMind — *Ben Arous, TN*

- Conducted research on multiple computer vision algorithms, choosing YOLOv8 for optimal speed and accuracy.
- Fine-tuned YOLOv8 for detecting angle and gusset objects in boxes, achieving 92.5% precision and 60% mAP50-95.
- Deployed the model as a real-time API on Microsoft Azure, integrating it with a dashboard for defect detection.
- Automated quality control, triggering alerts for misaligned or missing objects as boxes moved on a conveyor.
- Collaborated with a multidisciplinary team to replace manual defect detection for an industry client, boosting efficiency by 30%.
- Completed Microsoft Azure AI Fundamentals training and certification during the internship.
- **Skills:** YOLOv8, Computer Vision, Microsoft Azure, API Development, Real-Time Systems, TensorFlow, Python

Projects

AI-Powered Loan Approval System — October. 2024 – November. 2024

- Developed a scalable machine learning application for real-time loan approval decisions.
- Designed an end-to-end pipeline including data ingestion, transformation, and model training with hyperparameter tuning.
- Implemented custom utilities, logging, and exception handling for efficient debugging and streamlined operations.
- Dockerized the application and hosted it on Azure Container Registry for scalable cloud deployment.
- Automated CI/CD processes with GitHub Actions, ensuring seamless integration and deployment to Azure Web App Service.
- **Skills:** Flask, Microsoft Azure, Docker, GitHub Actions, CI/CD, Hyperparameter Tuning

Reinforcement Learning-based Robot Navigation — September. 2023 – December. 2023

- Designed a reinforcement learning-based system to navigate complex indoor environments.
- Simulated realistic home-like environments in Gazebo with dynamic obstacles.
- Leveraged ROS2 for seamless integration, utilizing RViz for real-time monitoring of the robot's path and sensor data.
- Collaborated with colleagues, employing GitHub for CI/CD, ensuring robust version control and seamless updates.
- Implemented the TD3 algorithm with a custom reward function to optimize path planning and obstacle avoidance.
- **Skills:** Reinforcement Learning, ROS2, RViz, Gazebo, TD3, Python, GitHub, CI/CD, Simulation Environments

Skills

Programming: Python, C, C++, Java, SQL (BigQuery, Oracle, Mysql)
Machine Learning & AI Frameworks: Tensorflow, Keras, Pytorch, LangChain
Cloud & MLOps: Google Cloud Platform , Vertex AI, BigQuery, Docker, CI/CD, GitHub Actions, IBM Watson, Microsoft Azure

Languages

English: Professional Fluency (TOIEC : C1 965/990)
French: Professional Fluency
German: Pre-Intermediate
Arabic: Native Fluency

Certificates

Professional Machine Learning Engineer (Google Cloud) October. 2024
TensorFlow Professional Developer (DeepLearning.AI) February. 2024
Deep Learning Specialization (DeepLearning.AI) October. 2023
AI Engineering Professional Certificate (IBM) July. 2023
AI Fundamentals (Microsoft Azure) June. 2023