Abdul-Aziz Al-Najjar

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Education

Carleton University, Ottawa, ON, Canada **Jan 2022 – Jun 2023**

Master of Engineering (MEng), Electrical and Computer Engineering, Data Science Specialization

- Cumulative GPA: **3.92/4.0,** under the supervision of Prof. Marzieh Amini
- Relevant Courses: Applied Deep Learning, Pattern Classification, Data Science, Simulation and Modeling, The Internet of Things, and Design of High-Performance Software.

Middle East Technical University, Ankara, Turkey **Feb 2017 – Jun 2021**

Honor Bachelor of Science (BSc), Electrical and Electronics Engineering

- Cumulative GPA: **3.3/4.0, Dean's Honor List** (Ranked 3rd)
- Scholarship Recipient, Specialized in Computer Architecture.

Skills

- **Scientific/Research:** Python (e.g., TensorFlow, Transformers, Open3D, Pandas, OpenCV, Scikit-Learn), MATLAB, R.
- **Programming and Database:** SQL, Python, R, C, C++, SystemVerilog, AVR, MIPS Assembly.
- **Data Analytics and Visualization:** R, Tableau, Power BI, Excel, Python (e.g. Seaborn, SciPy, Pandas, Matplotlib).
- **Soft Skills:** Research, Problem Solving, Communication, Teamwork, Adaptability, Project Management, Analytical Thinking.
- **Languages:** Fluent in English and Arabic. Beginner in French and Turkish.

Work Experience

Research Associate **Sep 2022 – Current**

Carleton University - Natural Resources of Canada (NRCan), Ottawa, ON, Canada

- Conducted research in infrastructure monitoring machine learning techniques to utilize LiDAR datasets for classifying point clouds and identifying high-risk vegetation encroachment on powerlines.
- Employed advanced data analysis methods to process extensive 900-million-point clouds, and successfully trained two cutting-edge Neural Network models, (PointCNN and RandLANet), for accurate encroachment detection, using Python.
- Maintained close collaboration with cross-functional teams to ensure alignment of the algorithm with project prerequisites, resulting in optimal performance achievement, the completion of a Master's project, and the preparation of a journal manuscript (expected summer 2023)

Teaching Assistant **Sep 2022 – Jun 2023**

Carleton University - Department of Information Technology, Ottawa, ON, Canada

- Collaborated with the instructors to prepare course materials (lab presentations, assignments, etc.) resulting in updated course/lab materials and improved clarity of course content.
- Explained course materials on complex topics in Applied Deep Learning and Computer Vision techniques, leading to an engaging and effective lab environment.
- Graded assignments and provided constructive feedback to 30+ Data Science students in different modalities (written assignments, video presentations, project git repositories)

Projects and Publications

Identifying Areas of High-Risk Vegetation Encroachment on Powerlines using LiDAR. **2022 – 2023**

Infrastructure Monitoring Lab, Carleton University, Ottawa, ON, Canada

- Developed a novel point-based encroachment detection algorithm with an exceptional 98% precision rate, significantly enhancing powerline failure prediction and leading to the submission of a journal article to the IEEE Sensors Journal for publication. More: https://azizalnajjar.ca/#ENC

Classifying Canadians' Financial Well-Being Status and Predicting Global Shocks Impacts. **2023**
Data Science Course, Carleton University, Ottawa, ON, Canada

- Constructed a predictive machine learning model that accurately predicts Canadians' Financial Well-Being (FWB) status, identifying key drivers, with notable insights on the disproportionate impact of COVID-19, leading to a presentation at Carleton University's Data Day 9.0 and the creation of a paper and poster. More: https://azizalnajjar.ca/#FWB

Brain Wave Classification in MI-BCI using Ensemble of Deep Learners. **2021 – 2022**
Applied Deep Learning, Carleton University, Ottawa, ON, Canada

- Developed an innovative DeepEnsemble model, combining advanced deep learning techniques (Transformers, MLP, CNN, XGBoost) to classify EEG signals for a Brain-Computer Interface (BCI) system, achieving superior accuracy and earning presentation and publication at the IEEE 41st International Conference on Consumer Electronics (2023 ICCE).More: https://azizalnajjar.ca/#DeepEnsemble

Machine vision-based control and warning system for autonomous RC car. **2020 – 2021**
Machine Vision Lab, Middle East Technical University, Ankara, Turkey

- Designed and developed a cost-effective self-driving car capable of autonomous operation with obstacle detection and real-time lane tracking using machine vision algorithms, as well as manual operation. Successfully tested the system on an RC car with Raspberry Pi and Arduino controllers, contributing to improved road safety and accessibility. Additionally, created a comprehensive report and demonstration video. More: https://azizalnajjar.ca/#AutoRC

Volunteer Experience:

Logistics, Volunteer, Rebranded Group, Ottawa, ON, Canada **2022 – 2023**

Volunteer, Muslim Student Association, Carleton University**,** Ottawa, Canada **2022 – 2023**

Co-founder, Logistics Director, Problem Solving Society, METU, Northern Cyprus **2018 – 2021**

Certificates and Courses

- 3 High Honor and 4 Honor Certificates – Middle East Technical University 2018-2021
- The Complete SQL Bootcamp: Go from Zero to Hero - Udemy 2023
- Natural Language Processing: NLP With Transformers in Python - Udemy 2023
- Generative AI, from GANs to CLIP, with Python and PyTorch - Udemy 2023
- Cloud Essentials – AWS Training and Certification 2023
- Relational Databases Essential Training- Linked in Learning 2023
- Tableau and R for Analytics Projects - Linked in Learning 2022
- The Complete Self-Driving Car Course - Applied Deep Learning – Udemy 2021