**Aziz Al-Najjar**

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# Career Objective

As a skilled recent graduate with a Data Science Master's and a track record of successful projects in deep learning, Computer Vision, and NLP, I am seeking a challenging position in the field of artificial intelligence. Backed by a robust project management background and collaborative mindset, I am committed to leveraging cutting-edge technologies, including AI and machine learning for innovative solutions to intricate challenges. I am eager to contribute my skills and knowledge to an organization that aligns with my values and has a strong vision for the future.

# Education

**Master of Engineering (MEng), Electrical and Computer Engineering 2021 – 2023**

Carleton University, Ottawa, ON, Canada

* Data Science Specialization with the Supervision of Prof. Marzieh Amini and a 11.76 CGPA (3.92/4)
* Relevant Courses: Applied Deep Learning, Pattern Classification, Data Science, Simulation and Modeling, The Internet of Things, and Design of High-Performance Software.

**Bachelor of Science (BSc), Electrical and Electronics Engineering 2017 – 2021**

Middle East Technical University, Ankara, Turkey

* Specializing in Computer Architecture, Dean's Honor List, Scholarship Recipient.

# Skills

* **Scientific/Research:** Python (PyTorch, 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 (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.

# Applied Projects

**Identifying areas of high-risk vegetation encroachment on powerlines using LiDAR. 2022 – 2023**

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

* Collaborated with the National Resources of Canada to predict powerline failures via LiDAR data, driving the development of a deep learning-based solution for encroachment detection.
* Executed comprehensive data preprocessing and cleaning, and leveraged diverse technologies including Python (ArcGIS, Keras, PyTorch), C programming, and Cloud Compare.
* Implemented novel point-based encroachment detection algorithm; achieved a remarkable 98% precision in efficiently identifying encroachments across diverse datasets from Surrey, Toronto, and Ottawa. More about the project: <https://azizalnajjar.ca/Enc.html>

**Classifying Canadian Citizens’ Financial Well-Being Status. 2023 – 2023**

Data Science Project, Carleton University, Ottawa, ON, Canada

* Developed an XGBoost-based machine-learning model in collaboration with the Financial Consumer Agency of Canada (FCAC) to classify Canadians' FWB using Python (Sci-Kit Learn, SciPy, Keras) and R.
* Analyzed annual financial survey data (2018-2022) to predict factors influencing FWB, considering global shocks (COVID-19).
* Presented precise FWB driver predictions and policy recommendations, employing data visualization tools like Tableau for effective communication. More about the project: <https://azizalnajjar.ca/FWB.html>

**Brain Wave Classification in MI-BCI using Ensemble of Deep Learners. 2022 – 2022**

Applied Deep Learning, Carleton University, Ottawa, ON, Canada

* Developed DeepEnsemble, an innovative deep learning-based solution, to classify EEG signals for right hand and right leg movements in a Brain-Computer Interface (BCI) system using Python (Keras, Jupyter Notebooks) and MATLAB.
* Integrated diverse Deep Learning models like Vision Transformers, MLP, CNN, and Hybrid models through an ensemble approach for enhanced accuracy.
* Outperformed state-of-the-art methods, culminating in presentation and publication at the IEEE 41st International Conference on Consumer Electronics (2023 ICCE). More about the project: <https://azizalnajjar.ca/DeepEnsemble.html>

**Machine vision-based control and warning system for autonomous RC car. 2020 – 2021**

Machine Vision, Middle East Technical University, Ankara, Turkey

* Engineered an innovative autonomous driving system by analyzing camera data, integrating image processing techniques for real-time car lane detection and tracking.
* Trained a YOLO-based object detection model using Python (OpenCV, Keras, Sci-Kit Learn) and C programming, enabling obstacle detection and control signal generation.
* Successfully tested the system on an RC car, validating its robustness for both Raspberry Pi and Arduino controllers, showcasing adaptability and real-world feasibility. More about the project: <https://azizalnajjar.ca/AutoRC.html>

# Work Experience

**Contract Research Assistant 2022 – 2023**

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

* Conducted research in infrastructure monitoring and the utilization of LiDAR datasets for identifying high-risk vegetation encroachment on powerlines, leading to the completion of a Master’s project, and preparation of a journal manuscript (expected summer 2023).
* Employed advanced data analysis methods to process extensive 900-million-point clouds, and successfully trained multiple cutting-edge Point Convolutional Neural Network (CNN) and RandLA-Net models for accurate encroachment detection.
* Maintained close collaboration with cross-functional teams to ensure alignment of the algorithm with project prerequisites, resulting in optimal performance achievement.

**Teaching Assistant 2023 – 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)

# Volunteer Experience:

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

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

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

# Certificates and Courses

* 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