

# Abdul-Aziz Al-Najjar

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October 6th, 2023

NEOM

Neom, Tabuk, Saudi Arabia

Dear Hiring Manager,

I am writing to express my keen interest in the Data Scientist – Urban Mobility position at NEOM, as advertised on LinkedIn. After coming across the job posting, I was immediately drawn to the opportunity to contribute my skills and experiences in data science and computer vision to the Land Mobility sector, particularly in the dynamic environment of NEOM.

With a Master of Engineering (MEng) degree in Data Science, from Carleton University, I have cultivated a strong foundation in data analysis and machine learning. During my time at Carleton, I had the privilege of working on projects that directly relate to the challenges and goals of the Land Mobility sector. Notably, my project on "Identifying Areas of High-Risk Vegetation Encroachment on Powerlines using LiDAR" required me to process and analyze vast datasets, harnessing advanced machine learning techniques to enhance predictive accuracy. My work on "Machine vision-based control and warning systems for autonomous cars" also involved designing and developing autonomous systems, which align with the cutting-edge technologies integral to urban mobility solutions.

I believe that my experience in these projects has equipped me with the expertise needed to drive impactful insights from complex mobility data, such as point clouds, which is vital in addressing the challenges faced by the Land Mobility sector. The opportunity to work at NEOM is particularly exciting as it presents an innovative and forward-thinking environment where groundbreaking technologies meet sustainable urban development. My passion for learning and applying new technologies in data science aligns perfectly with the innovative spirit of NEOM, making it an ideal place for me to further develop my skills and contribute to pioneering solutions.

I would welcome the opportunity to discuss how my background and experiences align with the needs of the Data Scientist role at NEOM. Thank you for considering my application. I look forward to the possibility of an interview at any time of your convenience to further explore how my skills can contribute to the success of your team.

Sincerely,

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**. Part of the Multimedia Research Group, 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 3<sup>rd</sup>)
- 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 cars. 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:**

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**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**

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- 3 High Honor and 4 Honor Certificates – Middle East Technical University 2018-2021
- The Complete SQL Bootcamp: Go from Zero to Hero – Coursera 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