

# Abdul-Aziz Al-Najjar

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## Education

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### 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 - Top 5%)**
- Scholarship Recipient, Specialized in Computer Architecture.

## Skills

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

## Full Time Work Experience

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### Research Associate

Sep 2022 – Current

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

- Conducted research in infrastructure monitoring using machine learning techniques with LiDAR datasets to classify point clouds and identify high-risk vegetation encroachment on powerlines.
- Trained advanced Neural Network models (PointCNN and RandLANet) and data analysis methods to process extensive 900-million-point clouds to achieve accurate encroachment detection.
- Collaborated with cross-functional teams to align algorithms with project prerequisites, resulting in the preparation of two journal manuscripts (Data Collection and Algorithm Development), and a Master's project completion.

### Teaching Assistant

Sep 2022 – Jun 2023

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

- Collaborated with instructors to enhance Applied Deep Learning and Computer Vision course materials.
- Graded assignments and provided constructive feedback to 30+ Data Science students in different modalities (written assignments, video presentations, project git repositories)
- Improved clarity of course content, resulting in an engaging learning environment.

## Internships & Volunteer Experiences

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Rebranded Group - Logistics, Board Member, Ottawa, ON, Canada

Mar 2022 – Sep 2023

Muslim Student Association - Volunteer, Carleton University, Ottawa, ON, Canada

Feb 2022 – Sep 2023

Problem-Solving Society - Co-founder, Logistics Director, METU, Cyprus

Feb 2018 – Jun 2021

KIBTEK - Electrical Engineer (Intern), Nicosia, Cyprus

Jun 2020 – Aug 2020

ACES Co. - Electronics Engineer (Intern), Riyadh, Saudi Arabia

Jul 2019 – Aug 2019

## Projects and Publications

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### **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, 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>

## 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 - 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