

# 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.

## 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.
- Improved clarity of course contents, for topics such as regression (simple, multivariate), classification (binary, multi-class, multi-label), clustering, object detection, data augmentation, and multiple deep and machine learning techniques.

## Skills

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- **Data Science and Machine Learning:** Proficient in Python, with extensive experience in TensorFlow, PyTorch, Scikit-Learn, XGBoost, for tasks like image and text classification, object detection, 2 & 3D semantic segmentation, and time series forecasting.
- **Data Analytics and Visualization:** Skilled in R, SQL, Pandas and Scikit-Learn for managing large datasets and statistical analysis. Worked in transforming complex data into actionable insights using, Seaborn, Matplotlib, Tableau, and Power BI.
- **Programming and Simulation:** Broad programming skills in R, C, C++, with additional experience in FPGA tools like SystemVerilog, VHDL, and Quartus ModelSim. Comfortable with software development processes and optimization tools.
- **Language Proficiency:** Fluent in both English and Arabic, enabling effective communication in a variety of contexts.
- **Soft Skills:** Proven problem-solving, analytical thinking, and adaptability. Strong communication and project management skills honed through research collaborations and teaching roles.

## Internships & Volunteer Experiences

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<b>Rebranded Group - Logistics, Board Member</b> , Ottawa, ON, Canada	<b>Mar 2022 – Sep 2023</b>
<b>Muslim Student Association - Volunteer</b> , Carleton University, Ottawa, ON, Canada	<b>Feb 2022 – Sep 2023</b>
<b>Problem-Solving Society - Co-founder, Logistics Director</b> , METU, NCC, Turkey	<b>Feb 2018 – Jun 2021</b>
<b>KIBTEK - Electrical Engineer (Intern)</b> , Nicosia, Cyprus	<b>Jun 2020 – Aug 2020</b>
<b>ACES Co. - Electronics Engineer (Intern)</b> , Riyadh, Saudi Arabia	<b>Jul 2019 – Aug 2019</b>

## Projects and Publications

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<b>Identifying Areas of High-Risk Vegetation Encroachment on Powerlines using point clouds</b> Infrastructure Monitoring Lab, Carleton University, Ottawa, ON, Canada	<b>Sep 2022 – Oct 2023</b>
<ul style="list-style-type: none"><li>Accepted for an article publication at the IEEE Sensors Journal. More: <a href="https://azizalnajjar.ca/#ENC">https://azizalnajjar.ca/#ENC</a></li></ul>	
<b>Classifying Canadians' Financial Well-Being Status and Predicting Global Shocks Impacts.</b> Data Science department, Carleton University, Ottawa, ON, Canada	<b>Jan 2023 – May 2023</b>
<ul style="list-style-type: none"><li>Poster presentation and paper preparation at Carleton University's Data Day 9.0. More: <a href="https://azizalnajjar.ca/#FWB">https://azizalnajjar.ca/#FWB</a></li></ul>	
<b>Brain Wave Classification in MI-BCI using Ensemble of Deep Learners.</b> Applied Deep Learning, Carleton University, Ottawa, ON, Canada	<b>Feb 2022 – Nov 2023</b>
<ul style="list-style-type: none"><li>Published and presented at the IEEE 41st ICCE conference. More: <a href="https://azizalnajjar.ca/#DeepEnsemble">https://azizalnajjar.ca/#DeepEnsemble</a></li></ul>	
<b>Machine vision-based control and warning system for autonomous RC car.</b> Machine Vision Lab, Middle East Technical University, Ankara, Turkey	<b>Nov 2020 – Jun 2021</b>
<ul style="list-style-type: none"><li>Successfully build and tested a cost-effective self-driving RC car with enhanced road safety and accessibility, featuring both autonomous and manual operation modes. More: <a href="https://azizalnajjar.ca/#AutoRC">https://azizalnajjar.ca/#AutoRC</a></li></ul>	

## Certificates and Courses

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- 3 High Honor and 3 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