

# Amr S. Mohamed, Ph.D.

Research Scientist, University of Toronto, Toronto, Ontario, Canada

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## EDUCATION

University of Toronto, Toronto, Ontario

- **Doctorate** in Electrical and Computer Engineering. GPA: 4.0/4.0. 2020 – 2024
- **Master's** in Electrical and Computer Engineering. GPA: 4.0/4.0. 2018 – 2020
- **Bachelor's** in Engineering Science. Major GPA: 3.97/4.0. Minor in Business. 2012 – 2017

Bell & Ontario scholar. Rogers research fellow. Honor graduate. 6x Dean's list. Hatchery entrepreneur.

## EXPERIENCE

### Research Scientist

University of Toronto, Toronto, Ontario

Sep 2018 – Present

- Pioneered 3 novel research agendas on artificial intelligence (AI) for electric grid cybersecurity. Supported research proposals securing \$1M in funding. Advised and mentored 4 student-researchers.
- Conceptualized AI simulations of cyberattacks. Utilized synthetic data from simulations to train attack detectors, achieving a 92-96% reduction in false alarms over state-of-the-art.
- Formulated safe AI algorithms to enable reliable and optimized AI-driven decision-making in safety-critical systems, guaranteeing a 0% failure rate for the learned control strategy.
- Devised explainable AI tools to automate real-time complex fault protection decisions in electric grids.

### Teaching Fellow and Lecturer

University of Toronto, Toronto & Queen's University, Kingston, Ontario

Sep 2018 – Present

- Lectured 3 courses and assisted the teaching of 8, spanning topics such as power systems stability and protection, system control, probability, and statistics.
- Designed and taught a new AI design course to 230 students, directing a team of 9 teaching assistants. Created 3 project assignments for autonomous driving in miniature robots.
- Co-instructed a capstone course, recruiting 10 clients in healthcare, tech, and utilities. Secured \$2.5K funding for student projects. Coached 5 teams in design, client relationship and project management.
- Innovated teaching methods, including programming games and animations to enhance learning and large language models to facilitate course feedback. Attained 20+ teaching award nominations.

### Co-founder, CEO

[Zoaq.ai](https://zoaq.ai), Toronto, Ontario

Jan 2021 – Dec 2021

- Assembled a team of 4 engineers and an MBA candidate to develop a computer vision cosmetics API, securing a fellowship with the University of Toronto's Engineering incubator and \$10K in funding.
- Led technical research and market assessment, and helped survey 150 potential customers to inform business strategy. Developed and presented startup pitches. Managed relationships with 4 advisors.
- Optimized software to minimize latency and enable real-time user experience. Co-deployed the product on Android devices to showcase prototypes to investors.

### Electrical Engineering Intern (EIT)

Hatch Ltd. Consulting, Mississauga, Ontario

Jul 2017 – Sep 2018

- Spearheaded engineering design for process upgrades at the largest gold mine in the Americas, doubling production capacity and enabling a 4x increase in process reliability.
- Directed the development of 250 electrical schematics to guide and facilitate project execution.
- Managed and planned on-field deployment and commissioning leading a team of 30+ technicians.

## **Data Analyst**

Ontario Electricity System Operator (IESO), Oakville, Ontario

May 2015 – Jun 2016

- Analyzed and reported emerging trends in electricity market data to ensure regulatory compliance. Identified over-payments totaling \$2.2M. Collaborated with legal team to recover over \$1M.
- Engineered 3 new data pipelines to streamline daily market assessment tasks and distill data into infographics for organizational leadership. Decreased manual analysis time by 15 hours per query.

## **PROJECTS**

### **Project Lead**

AUToronto Autonomous Vehicle Team, Toronto, Ontario

Sep 2021 – Jun 2022

- Developed the vehicle's dynamical models, state estimation, and linear and non-linear model-predictive control algorithms for trajectory tracking, capturing [1st place](#) at the SAE AutoDrive competition.
- Led requirements research for motion planning and collaborated on the development of system architecture. Created MATLAB/Simulink simulations for test-driven development.