BASAAM MAGED RASSAS

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PROFESSIONAL SUMMARY

Highly skilled professional specializing in autonomous UAV systems, machine learning, and simulation, with substantial industry experience. Published researcher and educator, contributing advancements in neural estimation, human-machine interaction, and computer vision applications tailored to autonomous UAVs. A citizen of both the US and Canada, authorized to work in both countries without sponsorship.

PROFESSIONAL EXPERIENCE

Lead Simulation Developer, *Obruta Space Solutions* Jun 2025 – Present

- Designed and developed a modular orbital simulation engine in Unreal Engine to support satellite rendezvous, proximity operations, and docking (RPOD) testing for autonomous GNC and computer vision algorithms.
- Engineered a dual-socket TCP architecture enabling real-time spacecraft telemetry and asynchronous high-resolution image capture from onboard camera models, including dynamic control of render pipelines for dataset generation.
- Synthesized realistic multi-view training datasets using photorealistic lighting, SPICE-driven ephemeris time propagation, and satellite-attached CineCameraActors with precise optical parameter control for sim-to-real vision model training.

UAV Systems Design Engineer, *AXL Electric Vehicles* Jul 2024 – Jan 2025

- Led the design and delivery of the Discovery X8 UAS, a modular and scalable UAV system, integrating advanced avionics, sensor arrays, and payload delivery mechanisms, enabling high-performance autonomous operations valued at $100,000.
- Streamlined system development by managing avionics and structural integration, ground station interface design, and rigorous testing protocols, ensuring reliability and client compliance.
- Accelerated commercialization by producing a functional prototype that enabled the client to secure investment for scaling to a production-level UAV product, validating the design's technical and commercial viability.

Graduate Teaching Assistant, *Toronto Metropolitan University* Sep 2023 – Apr 2025

- Led comprehensive instruction in the Aircraft Dynamics course by developing and delivering weekly lesson plans to over 20 students, enhancing students' problem-solving skills and reinforcing their understanding of the subject matter.
- Facilitated hands-on learning in the Introduction to Aerospace Design course by spearheading 13 weekly lab sessions that focused on imparting practical skills in the use of CATIA and MATLAB/Simulink for computer-aided design and engineering simulation.
- Assessed reports and assignments, providing thorough evaluations and constructive feedback for improvement while fostering a collaborative and engaging learning environment.

Computer Vision Engineer Intern, *Maple Advanced Robotics Inc.* May 2022 – Sep 2022

- Spearheaded research on point cloud data processing, increasing detection accuracy by 2% by implementing a custom VoxelNet model using tensorflow to enhance the autonomous tool path planning capabilities.
- Proposed framework for model integration aimed at optimizing efficiency in repeated machine operations and improving user experience.
- Authored comprehensive documentation for each model tested, ensuring seamless knowledge transfer and facilitation of future development within the team.

TECHNICAL PROFICIENCIES

Programming Languages	Computer Aided Design	Simulation Software	Frameworks
Python	CATIA V5	Unreal Engine	PyTorch
MATLAB	SolidWorks	ANSYS Mechanical & Fluent	TensorFlow
C/C++	Fusion360	Gazebo	ROS

EDUCATION

MASc, Aerospace Engineering, *Toronto Metropolitan University* Sep 2023 – Aug 2025 | Toronto, ON

BEng, Aerospace Engineering, *Ryerson University* Sep 2017 – Apr 2023 | Toronto, ON

PUBLICATIONS

Synthetic Dataset for Vision-Based Air-to-Air Object Detection, 18 Aug 2025
IEEE 21st International Conference on Automation Science and Engineering

Neural Moving Horizon Estimation: A Systematic Literature Review, 11 May 2025
MDPI Electronics

A Study of Upper-body Postural Parameters for Headrest Comfort Evaluation, 05 Jan 2025
International Journal of Industrial Ergonomics

The Role of Muscle Forces in Neck Comfort for Static Seating: A Pilot Study, 04 Apr 2024
Frontiers in Mechanical Engineering