







# DARA VARAM

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## EDUCATION

American University of Sharjah *Sept. 2018 - Present*  
**Master of Science in Machine Learning** *GPA: 4.0*  
Bachelor of Science in Computer Engineering, Mathematics (Double major)  
Minor in Data Science

Comp. Eng. Thesis: *Deep Learning framework for pipeline fault detection* Advisor: M. Pasquier  
Mathematics Thesis: *Multiplicative Groups of Polynomials with Non-Zero Identities* Advisor: A. Badawi  
Machine Learning Thesis: *Dynamic distribution-based quantization for LLMs* Advisor: M.I. AlHajri

Expected date of graduation: *December, 2025*

## EXPERIENCE

**Graduate Assistantships** *Jan. 2024 - Present*

**Teaching Assistant:** *Programming I, Programming II, Database Systems*  
*Computer Networks, Embedded Systems, Computer Systems*  
**Research Assistant:** *Compression, quantization and optimization of general neural networks*

**Part-time Enrollment Coordinator @ AUS** *Dec. 2019 - Present*  
Managing the admissions pipeline by processing applicants, organizing recruitment events, and coordinating contact center activities. Handling document submission to evaluation and review, providing both back-end and front-end IT support. Conducting data analysis projects for streamlining admissions processes and enhancing efficiency.

**Part-time Technical Editor for the Palestinian Journal of Mathematics** *January 2022 - Present*  
Technical Editor for PJM. Supervised by Dr. Ayman Badawi. Accessible through <https://pjm.ppu.edu/>

**Research Assistant for the Department of Mass Communication** *Jan. 2023 - June 2023*  
*Statistical analysis and data analytics project in Critical Media Literacy.*  
- Advisor: Dr. A. Al-Najjar

**Research Assistant - Department of Computer Science & Engineering** *Sept. 2021 - Dec. 2022*  
*Performance Analysis of Novel Photon-Trapping PIN/APD Silicon Photodetectors and Current-Assisted Photonic Demodulators for Communication and Lidar applications.*  
- Advisors: Dr. T. Landolsi, S. Ghandiparsi

**Undergraduate Assistantships** *Jan. 2019 - May 2021*

**Teaching Assistant:** *Calculus I* Dr. Gajath Gunatillake  
*Data Structures & Algorithms* Dr. Michel Pasquier  
**Tutor:** *Calculus I, Calculus II, Calculus III,* Dr. Hana Sulieman  
*Differential Equations, Linear Algebra*

**Software Development Intern @ Tantum Projects, Riyadh, Saudi Arabia** *Jun. 2021 - Aug. 2021*  
Developed a productivity tool (cross-platform, website & app) using the React Native framework. Full-stack software development internship, conducted remotely within a 5 week period.

## PUBLICATIONS

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- S. Ghandiparsi, D. Ben Hamadou, D. Varam et al., *Lumerical Simulation of Surface-Illuminated Silicon PIN Photodiodes for Datacenter Interconnects*. ICCSPA 2022, Cairo, Egypt - **Published: IEEE**  
Available through: <https://ieeexplore.ieee.org/document/10019094>
- R. Mitra, D. Varam, E. Mohamed Ali, H. Sulieman, F. Kamalov. *Development of Synthetic Data Benchmarks for Evaluating Feature Selection Algorithms*. ISMODE 2022, Jakarta, Indonesia - **Published: IEEE**  
Available through: <https://ieeexplore.ieee.org/document/10180928>
- M. Ghaly, R. Mitra, A. Al Rayess, A. Ahmed, D. Varam et al., *A Hybrid Rolling and Flying Robot for Pipeline Fault Detection Using Deep Learning*. ASET 2023, Dubai, UAE - **Published: IEEE**  
Available through: <https://ieeexplore.ieee.org/document/10180770>
- D. Varam, R. Mitra, M. Mkadmi, R. Riyas, D. A. Abuhani, S. Dhou, A. Alzaatreh. *Wireless Capsule Endoscopy image classification: An Explainable AI approach*. **Published: IEEE Access**  
Available through: <https://ieeexplore.ieee.org/document/10262261>
- D. Varam, "Construction of Multiplicative Groups of Polynomials with Non-Zero Identities in  $Z_p[x]$ ." **Mathematics Senior Theses 2023**, American University of Sharjah, Sharjah, UAE  
Available through: <http://www.ayman-badawi.com/>
- R. Mitra, E. Mohamed Ali, D. Varam, H. Sulieman, F. Kamalov. *Synthetic Data Generation for Feature Selection Algorithm Evaluation*. **Published: MDPI Mathematics**  
Available through <https://www.mdpi.com/2227-7390/12/4/570>
- D. Varam, L. Khalil, T. Shanableh. *On-Edge Deployment of Vision Transformers for Medical Diagnostics: A Study on the Kvasir-Capsule Dataset*. **Published: MDPI - Applied Sciences**  
Available through: <https://www.mdpi.com/2076-3417/14/18/8115>

### Accepted papers:

- D. Varam, A. Bayoumy, D. A. Abuhani, M. Zulkernine. *On-Image-Scaling Attack Prevention in Industrial Cyber Physical Systems*. **Accepted: BDCAT-2024, Sharjah, UAE**  
Conference link: <https://www.uccbdcat2024.org/BDCAT/>

### Submitted papers:

- D. Varam, R. Mitra, F. Kamran, D. A. Abuhani, H. Sulieman, I. Zualkernan. *Estimating Nitrogen Dioxide Levels Using Open Data and Machine Learning: A Comparative Modeling Study*. **Submitted to: GSW-2025, Dubai, UAE**  
Conference link: <https://gsw2025.ae/>

### On-going contributions:

- D. Varam, L. Khalil M. Darwish, M.I. AlHajri. *Characterizing Spike-Decay in ViTs: How Do Vision Transformers Separate Data?* **Intended for submission to ICML 2025.**
- D. Varam, M.I. AlHajri. *Low-Rank Adaptation of Large Language Models: A Survey of Parameter Reduction and Quantization Methods*. **Intended for submission to JMLR.**
- D. Varam, L. Khalil, R. Mitra M.I. AlHajri. *QLoRA-XS: Combining low-bit quantization and parameter reduction techniques for fine-tuning LLMs.*
- H. Abushahla, D. Varam, M.I. AlHajri. *Exploring Quantization and Deployability for Software Defined Radio Signal Classifiers.*
- L. Khalil, D. Varam, A. Bayoumy, A. A. Akson. *Measuring Bias in Contextual Embeddings Across Arabic and Western Terms.*

## TALKS, CONFERENCE PRESENTATIONS

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- **eXplainable AI for Image Classification Tasks in Medicine** - Google I/O Extended UAE 2024. Organized through Google Developer Groups Sharjah. Conducted online on August 18<sup>th</sup>, 2024

## AWARDS, HONORS

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- 1st place - AI-City Quest 2024 Hackathon. Organized by **American University of Sharjah, MIT Senseable City Lab, MBRSC, ESGRS. ByBit, Blockchain for Good** (April 2024)
- 2nd place in **National UAE Mars Mission Robotics Competition** (amongst 340 teams) / (November 2021)
- **PetroFac Endowment Scholarship** Recipient (2019 - 2023)
- **Dean's & Chancellor's List Scholarship** Recipient (2018 - 2023)
- Member of the **Eta Kappa Nu Honor Society** (2020 - present)
- Member of the **Engineering Honors Society** at the American University of Sharjah (2020 - present)

## RESEARCH GRANTS

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- American University of Sharjah College of Engineering Undergraduate Research Grant, *CEN-URG-S22-09*. Project: **Designing a Lightweight Aerial Manipulator with a CoG Compensation Mechanism for Pipeline Inspection Purposes.** Grant amount: 8,000.00 AED

## LANGUAGES, SOFTWARE

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### Languages

<b>Scientific:</b>	Python, R, MATLAB
<b>Functional and Object Oriented:</b>	Java, C#
<b>Web:</b>	HTML, CSS, JavaScript
<b>Native:</b>	C, C++
<b>Data Analysis:</b>	SQL

### Software

<b>Geographic Information Systems:</b>	QGIS, ArcGIS
<b>Simulation Tools:</b>	ANSYS Lumerical, ADS, MultiSim, JPM
<b>Data Analysis:</b>	MiniTab, SAS Enterprise Miner
<b>Deep Learning:</b>	TensorFlow, Keras, PyTorch
<b>Machine Learning and Scientific Programming:</b>	SciKit-Learn, NumPy, Pandas
<b>DevOps:</b>	Git, PyCharm, Visual Studio, HTTP, PuTTY
<b>Application Development / Software Development:</b>	Flutter, Dart