

Dean Francis Tolero

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EDUCATION

Canadian University Dubai

Dubai, United Arab Emirates

Bachelor in Computer Science (GPA: 3.81/4.0)

Aug. 2022 – May 2026

- **Graduated Magna Cum Laude** | Winner, Canadian University **Coding Competition 2022** | Dean's List | **Scholar**

EXPERIENCE

Artificial Intelligence Research Assistant

Sep. 2025 – May 2026

Dr. Sahil Garg, Canadian University Dubai

Dubai, United Arab Emirates

- **Co-authored** an **IEEE** paper on **Agentic AI** (Osmotic Intelligence), focusing on explainable and sustainable training.
- Contributed to a **\$250,000 AWS research grant** proposal by conducting cost-performance analysis for sustainable LLM training.
- **Co-authoring a book for Springer Nature** on Agentic AI, contributing research, content structuring, and technical analysis.
- Contributed to the development of the “**Osmotic Intelligence**” **framework**, assisting with **cloud-edge workload distribution**, Reinforcement Learning experiments, and XAI integration (Integrated Gradients).

Data Analyst

Nov. 2025 – Dec. 2025

Namat Events Managing & Organizing

Dubai, United Arab Emirates

- **Managed** and analyzed **real-time transportation data** during events to ensure smooth logistics and operations.
- **Collected, verified, and entered live data** accurately to support decision-making for the transportation team.
- **Collaborated** with **Patek Philippe**, ensuring client requirements and standards were met.

Software Engineer

May. 2025 – Sep. 2025

MoVlogs - Vibes Family Management

Dubai, United Arab Emirates

- Designed and deployed **responsive websites** (MoVlogs.com, MakeFym.com, MummyMo.com) using modern web technologies, **ensuring 100% cross-device compatibility**
- Automated LinkedIn outreach with Python scripts, scaling client acquisition by 300% and reducing manual workload by 80%, enabling data-driven lead generation.
- Developed a **Python application for international phone number analysis**, automatically detecting country of origin and metadata with **98% accuracy**, improving contact database quality and verification efficiency.

PROJECTS

Federated Learning Phishing Defense System | *Python, PyTorch, FastAPI, SQLAlchemy*

Sep. 2025 – May. 2026

- Fine-tuned **DistilBERT** for phishing email detection, achieving **96.3% accuracy** and **0.963 F1** on a held-out test set.
- Implemented **FedAvg** in a custom **FastAPI aggregation server**, weighting client updates by local sample count and handling **non-IID** data distributions across clients.
- Designed a hybrid threshold/timeout round-scheduling strategy to balance aggregation latency against client availability, with SQLAlchemy-backed persistence for round state and weight updates.
- Engineered the on-device training loop to compute and transmit **weight deltas** only, eliminating raw data transmission and validating correctness with a **pytest** integration suite.

Dementia MRI Classifier | *Python, Pytorch, NiBabel, Captum*

Oct. 2025 – Dec. 2025

- Developed a **pipeline to convert 3D MRI volumes into 2D slices**, performing filtering, normalization, and augmentation for CN/AD classification.
- Built a **custom lightweight CNN (100K parameters)** with batch normalization, dropout, and He initialization for robust binary classification on imbalanced datasets.
- Integrated **Explainable AI (Integrated Gradients)** to visualize predictions, compute deletion/insertion metrics, and interpret key brain regions influencing model decisions.
- Designed a **reproducible end-to-end training** workflow with early stopping, learning rate scheduling, gradient clipping, and result visualization for model evaluation and improvement.

RFID Attendance Scanner | *JavaScript, MySQL, Node.js, Express.js*

March 2025 – May 2025

- **Successfully developed and sold** a web-based RFID attendance system for a school, generating approximately **1,000 AED in revenue**.
- Developed a system with **real-time student tracking** and **automated parent notifications**.
- Designed and maintained the database using MySQL to **manage student and attendance data efficiently**.
- Implemented the backend with Node.js and Express.js, facilitating **smooth interaction between server and frontend**.

TECHNICAL SKILLS

Libraries: PyTorch, Scikit-learn, NumPy, pandas, Captum, NiBabel

Languages: Python, C++, SQL, Java, JavaScript

Frameworks: Node.js, Express, FastAPI, Flask

Systems: Git, Docker, Linux, Arduino