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Eyad Gad

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WORK & RELEVANT EXPERIENCE

AI Researcher   **May 2025 — Present**
NORDIK Institute   *Sault Ste. Marie, Canada*
- Built NLP pipeline over a 10-year Twitter corpus (ingestion, cleaning, labeling, evaluation) to produce a Financial Stress Index.
- Built reproducible workflows (filters, regex, fixed seeds, versioned data) for high-quality tweet selection and preprocessing.
- Designed hybrid sentiment and feature extraction using lexicons and LLMs (BERT & VADER) to score financial polarity.

Graduate Research & Teaching Assistant   **Sep 2023 — Dec 2024**
The University of Western Ontario   *London, Canada*
- Reviewed challenges of FL in IoT networks and benchmarked FedAvg/FedProx/SCAFFOLD under statistical heterogeneity.
- Proposed a deep learning training optimization (REDUS) reducing training time by ~72% with ~1.6% accuracy trade-off.
- Implemented automated testing frameworks for grading programming/networking courses using C++/Python/Docker.

Intern Researcher   **Feb 2022 — May 2023**
Centre for Informatics Sciences   *Giza, Egypt*
- Led two applied AI studies—Alzheimer's detection using multimodal data and federated U-Net segmentation on BC ultrasound.
- Mitigated class imbalance and improved the AD baseline by $\sim 10\%$; Achieved $\sim 96\%$ segmentation accuracy for BC in FL.
- Produced reproducible pipelines and documentation for preprocessing, imbalance handling, and evaluation (Dice/IoU/ROC).

Intern AI & Embedded Software Developer   **Jun 2021 — Sep 2021**
Delta Care   *Cairo, Egypt*
- Implemented a C-based PID temperature controller for precise sample regulation in a lab workflow.
- Optimized Python-C/C++ interprocess communication, reducing response latency by ~70%.
- Built CV pipelines: YOLOv5 + DeepSORT for motility tracking (~91%) and Mask R-CNN for morphology segmentation (~87%).

EDUCATION

Explore my transcripts at 🔗 *csd.uwo.ca/ẽgad/transcripts*

M.Sc. in Computer Science, *The University of Western Ontario, Canada* (Grade: **87%**)   **Sep 2023 — Dec 2024**
B.Eng. (Hons) in Computer Engineering, *Nile University, Egypt* (Grade: **3.51/4.0**)   **Sep 2018 — May 2023**

SELECTED PUBLICATIONS

Explore more papers at 🔗 *scholar.google.com/citations?user=Vmjcp8gAAAAJ*

REDUS: Adaptive Resampling for Efficient Deep Learning in Centralized and Federated IoT Networks   🔗 ICC2025
Communication-Efficient and Privacy-Preserving FL Via Joint Knowledge Distillation and Differential Privacy 🔗 TVT2024
A Robust FL Approach for Combating Attacks Against IoT Systems Under Non-IID Challenges   🔗 SmartNets2024
Advancing Brain Tumor Segmentation via 3D UNet Architecture and Digital Image Processing   🔗 MEDI2023
Deep Learning-Based Context-Aware Video Content Analysis on IoT Devices   🔗 Electronics MDPI2022

SELECTED PROJECTS

Explore more projects at 🐙 *github.com/eyadgad*

ML & Data Science
- 🐙 FL Based IoT Attack Detection in IID and Non-IID
- 🐙 FL Based Breast Cancer Segmentation Using UNet and FedProx
- 🐙 Twitter Data Scraping and Preprocessing
- 🐙 Brain Tumor Segmentation via 3D UNet and Digital Image Processing
- 🐙 Early Detection of Alzheimer's Disease Based on Clinical and Neuroimaging

Computer Systems & Networking
- 🐙 IoT-Based Smart Home System with Cloud Interface
- 🐙 Multi-Node Messaging System Using Sockets and Threading
- 🐙 Digital IC Design of 4-bit CMOS-based ALU

AI Application Development
- 🐙 QT Desktop App for AI Agentic chat application
- 🐙 QT Desktop App for Shopping with AI & Database Integration

SKILLS

Programming Languages	Python (Proficient), SQL(Familiar), C/C++ (Familiar)
GenAI & ML	Data Science, LLMs (OpenAI, BERT, Llama), RAG, Fine-tuning, PyTorch, TensorFlow
Data Engineering	PySpark, Databricks, PostgreSQL, MongoDB
Backend & APIs	FastAPI (REST, GraphQL, gRPC), FastAPI, PySpark, Git
MLOps/DevOps & Cloud	Docker, Kubernetes (OpenShift/OCP, EKS), CI/CD (Git, Jenkins), AWS (Lambda, SageMaker)