

Mostafa Deiab

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Education

- Masters of Applied Science in Computer Engineering with Specialization in AI** Jan. 2025 - Present
University of Guelph Guelph, ON, Canada
- Bachelor of Engineering in Computer Engineering with Honours** | University of Guelph Sep. 2019 - Dec. 2024

Work Experience

- Graduate Research Assistant** | Intelligent Systems Lab, Guelph, Canada Jan. 2025 - Present
- Conducting preliminary research on development of Machine Learning (ML) system for optimizing integrated circuits (IC) projected to improve electrical performance and reliability.
- Undergraduate Research Assistant** | Advanced Manufacturing Lab, Guelph, Canada Jan. 2021 - Dec. 2024
- Developed and deployed a Machine Vision defect detection system for detecting embedded and process defects from painted automobile parts using deflectometry data with TensorFlow and OpenCV. Achieved 96% accuracy and reduced processing time by 40%.
 - Designed user-friendly interface that allowed seamless setup settings and displayed live defects found on industrial paint line and inspection line reducing bypassed defective parts by 35% and reducing inspection time by 75%.
 - Deployed a Convolutional Neural Network (CNN) model within an industrial paint line, leading to annual cost savings of \$3.5 million through enhanced quality control processes. Presented research at ISIME 2024.
- Lab Systems Administrator** | Advanced Manufacturing Lab, Guelph, Canada Sep. 2019 - Dec. 2020
- Configured and maintained a Debian Server with RAID to enhance data security and accessibility, supporting research operations. Developed custom tools for system monitoring using Python and Bash.
 - Optimized workstation configurations, integrating GPU acceleration and cooling systems, for 10+ researchers. Managed system security, reducing vulnerabilities, achieving zero security breaches.

Projects

- DailyDigest** | Personal Project Present
- Developing an AI-powered news aggregator using Natural Language Processing (NLP) libraries for topic-based summarization, integrating advanced scraping techniques with custom transformer-based models.
- Homelab Server** | Personal Project Jan. 2025
- Configured and maintained a homelab server using Infrastructure as Code (IaC), automating deployment of 15+ services including authentication, media management, and cloud storage through Docker with Ansible playbooks.
 - Implemented security measures with Authelia and Traefik reverse proxy, while ensuring reliability through Grafana monitoring and automated backups. Actively conducting vulnerability assessments and penetration testing.
- Smart Utilities System** | Capstone Project Dec. 2024
- Developed a real-time water monitoring system utilizing Internet of Things (IoT) sensors, Bluetooth Low Energy (BLE) boards to enable anomaly detection for leaks, pressure fluctuations, and inefficiencies.
 - Demonstrated real-time accurate predictions up to 72 hours ahead with 90% accuracy, supported by ML models trained on historical data. Designed with a user-friendly interface for consumers.
- ML-Arch** | Course Project Apr. 2023
- Benchmarked Artificial Neural Networks (ANN) and CNN on multiple Edge Server Architectures, achieving a 30% increase in inference speed and a 20% reduction in power consumption.
 - Optimized AI processing through GPU and FPGA integration, achieving 30% faster processing times and reducing latency in real-time applications. Authored to the publication "On Edge Level: The Impact of Adopting Deep Learning Techniques on Server Design."

Technical Skills

- Programming Languages:** Python, Java, C/C++, JavaScript, SQL, C#
- Frameworks & Libraries:** TensorFlow, Kears, PyTorch, Scikit-learn, NumPy, Pandas, OpenCV, Flask, Node.js
- Development Tools & Technologies:** Git, Docker, Kubernetes, CI/CD, AWS, FastAPI
- Core Competencies:** Machine Learning, Neural Networks, Deep Learning, Data Science, Computer Vision, Edge Computing, Agile Development
- Certifications:** Deep Learning Specialization, IBM Data Analyst Professional Certificate, Google Cybersecurity Certificate