Tyrell (Ty) To

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Summary

Master's graduate in Electrical and Computer Engineering, specialized in deep learning, computer vision, and image processing. 2+ years of experience in applying machine learning to real-world problems. Demonstrated excellence in presenting complex ideas and leading discussions with technical and non-technical audiences.

Education

Marquette University — Milwaukee, WI
Master of Science in Electrical and Computer Engineering, GPA: 3.71 — August 2022 – August 2023

Marquette University — Milwaukee, WI
Bachelor of Science in Electrical and Computer Engineering, GPA: 3.82 — August 2018 – May 2022

Professional Experience

ML Breast Cancer Research Assistant — January 2021 – August 2023
Marquette University — Milwaukee, WI

- Developed a patch based XGBoost and PyTorch model for real-time breast cancer diagnosis
- Achieved 95% accuracy for limited and imbalanced data with optimized decision fusion approach
- Collaborated with Medical College of Wisconsin oncologists, presenting and discussing experiments
- Published findings with 1,000+ views, contributing to AI advancements in healthcare

AI Water Safety Research Assistant — May 2022 – August 2022
Marquette University — Milwaukee, WI

- Engineered a novel TensorFlow model using AC signals for lead and copper detection in water
- Accomplished a 97% accuracy improvement over previous models based on 15,000+ data samples
- Guided experiment discussions in weekly team meetings, shaping project strategy and progress
- Showcased the model's water safety potential to industry stakeholders via PowerPoint presentations

Project Experience

Tool Lifespan Predictor — github.com/tyrellto/RUL-tool-prediction

- Ranked 1st of the class in the Foxconn Industrial AI Data Challenge
- Minimized tool vibration by 14% using NumPy for more effective waveform analysis
- Stabilized forecast results with XGBoost, and linear regression implementation

Basketball Free Throw Analytics — github.com/tyrellto/basketball-free-throw-prediction

- Led a 5-member team in developing a CatBoost model with skeletal movement data
- Managed data capture of 1,700+ throws with OpenPose, Brekel Body v3, and Azure Kinect Cameras
- Obtained 68% accuracy with potential in sports analytics to enhance athletes' performance

FPGA Digit Classification — github.com/tyrellto/FPGA_NN

- Reached 50 ms inference speed, enabling real-time digit recognition
- Streamlined deployment on Cyclone V System-on-Chip using Intel Quartus Prime

Abdominal Trauma Detection — github.com/tyrellto/ATD-challenge

- Applied 3D UNet and LSTM models on 2000+ CT scans for segmentation and trauma detection

Technical Skills

Languages: Python, SQL, Java, C, C++, VHDL, Verilog
Libraries: PyTorch, TensorFlow, XGBoost, NumPy, Pandas, OpenCV, Scikit-Learn, Scikit-Image
Frameworks: Flask, MLflow, Streamlit
Developer Tools: Git, Docker, VS Code