Tyrell To

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Education

Marquette University - Milwaukee, WI

- Master of Science in Electrical and Computer Engineering — August 2023
  GPA: 3.71/4.00, 5-Year Accelerated Degree Program Student
- Bachelor of Science in Electrical and Computer Engineering — May 2022
  GPA: 3.82/4.00, Dean's List 2018-2022

Experience

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

- Researched deep learning methods for breast cancer classification with the Medical College of Wisconsin
- Optimized techniques for a limited, imbalanced dataset, achieving 95% accuracy
- Published a conference paper and journal article based on my investigative findings
- Leveraged knowledge in Python, image preprocessing, deep learning, and basic histopathology

Water Sensor Research Assistant, Marquette University - Milwaukee, WI — May 2022 – August 2022

- Led machine learning efforts to predict presence of lead, and copper in water based on alternating current
- Identified challenges in cross-day prediction, suggesting variations in sensor readings
- Analyzed underlying factors to understand and improve predictability across different sample days
- Leveraged knowledge in Python, deep learning libraries, and signal processing models for day-specific accuracy

Summer Research Fellow, Marquette University - Milwaukee, WI — May 2021 – November 2021

- Investigated convolutional neural network and transfer learning methods for breast cancer classification
- Implemented a patch-based transfer learning method for breast cancer diagnosis during surgery
- Presented my accomplishments on Marquette University Undergraduate Research Day (10/29/2021)
- Leveraged knowledge in Python, and deep learning libraries for algorithm implementation and data analysis

Projects

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

- Developed a CatBoost based approach for free-throw prediction from skeletal data
- Oversaw the design process from prototype to delivery as the product owner, ensuring sponsor's requirements
- Used OpenPose, Brekel Body v3, and Azure Kinect for advanced skeletal data capture and processing

Foxconn Industrial AI Data Challenge — github.com/tyrellto/RUL-tool-prediction

- Minimized cutting tool vibration using Numpy/Pandas to keep essential vibration waveform features
- Implemented XGBoost for advanced predictive modeling, enhancing tool life forecasts
- Used linear regression with Scikit-Learn to complement predictions on challenge data

Skills

Languages: Python, SQL, Java, MATLAB, C, C++, OpenGL
Frameworks: PyTorch, Tensorflow/Keras, XGBoost, NumPy, Pandas, OpenCV, Scikit-Learn, Scikit-Image

Publications

- To, Lu, Ye. "Deep learning classification of deep ultraviolet fluorescence images toward intra-operative margin assessment in breast cancer", Frontiers for Oncology 2023
- To, Gheshlaghi, Ye. "Deep Learning for Breast Cancer Classification of Deep Ultraviolet Fluorescence Images Toward Intra-Operative Margin Assessment", IEEE Engineering in Medicine and Biology Society 2022