Nana Kwame Boakye Kankam

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Education

Bradley University – BSc: Electrical and Electronics Engineering | **Drexel University** – MSc: Machine Learning Engineering

Professional Experience & Research

Computer Vision Research Co-op – Drexel University (iMaple Lab)
- Tasked to collect, annotate, and perform sophisticated pre-processing techniques on image data.
- Trained a yolov5s network on our annotated data, extracted the weights, and ran inference from a Raspberry Pi 4 for real-time object detection.
- Conducted knowledge distillation (SimKD) to reduce the yolov5s "teacher" model to a smaller one with similar performance for the limitations of the Raspberry 4 hardware.
- The Robotics team control system relies on the extracted bounding box information from the computer vision algorithm for control instructions through serial communication to an ESP32.

Electrical Power Systems Engineer – Ghana Grid Company (GRIDCo)
- Investigated the impact of the relocation of Aboadze Ameri Power Plant to Kumasi on the Ghana grid system for commissioning.
- Conducted the Grid Impact Study to investigate the impact of a 60MWp Photovoltaic generator installed at Bongo (Northern Region of Ghana), on the Grid during the off-peak hours.
- Simulated Grid cases on PSS/rE, to inform on the best locations to install 250MW of hydroelectric power based on their impact on meeting demand and contribution to systems losses, as well as the improvement of voltage levels in and around the area.
- Developed an end-to-end Machine Learning pipeline for prediction on load and demand forecasting.
- Created and developed a Python algorithm to analyze transformer performance, ensuring overall system improvements.

Control Systems & Automation Internship – Process and Plant Automation
- Interfaced multiple platforms for building automated systems, including a comprehensive worker tracking system leveraging GPS and server-side data.
- Interfaced platforms like "Alexa" for smart home systems, demonstrating proficiency in integrating different technologies.
- Programmed a system for real-time identification of workers and their locations, for on-site monitoring.

Machine Learning and Data Science Projects

Machine Learning-Based Market Prediction Project – *Python, Pandas, NumPy, TensorFlow, sci-kit learn.*
- Developed and validated a predictive machine learning model using Python with TensorFlow and sci-kit learn, applying time series analysis and neural networks to historical market data for trend identification.
- Enhanced model accuracy through advanced feature engineering, leveraging macroeconomic indicators and market sentiment, and employed rigorous cross-validation and back-testing for performance assessment.
- Authored a detailed project report documenting the model development lifecycle, from conceptualization to validation, demonstrating the synthesis of technical acumen and effective communication of complex analyses.

Personal Finance Software Development Project – *Python, Java, Pandas PowerBI, Mathematical Modelling, Algorithm Development.*
- Developed a personal finance management application using Python, Java, and PowerBI, focusing on budgeting, investment tracking, and data visualization.
- Integrated financial APIs to fetch real-time market data, allowing for the simulation of stock trading and portfolio management.
- Implemented rigorous unit testing and debugging procedures to ensure the accuracy and reliability of financial calculations within the app.

Independent Financial Data Analysis Project – *Python, Pandas, NumPy, PowerBI*
- Designed and conducted a data analysis project using Python, focusing on historical stock market trends and predictive modeling.
- Created and back-tested various trading strategies using historical data to evaluate their effectiveness and risk profiles.
- Analyzed large financial datasets, utilizing statistical methods to extract actionable insights and identify market opportunities.

Quantitative Finance Research Simulation – *Python, Pandas, Sci-kit Learn, PyTorch, Matplotlib*
- Initiated a self-directed study to develop quantitative trading models, simulating real-world market conditions using Python and SAS.
- Conducted extensive research into different quantitative strategies, focusing on algorithmic trading and risk management techniques.
- Collaborated with online communities or peer groups to discuss findings, refine strategies, and gain feedback on model development and implementation.

Certifications, Relevant Courses, and Hard Skills

Certifications and Relevant Courses: Data Structures and Algorithms, Natural Language Processing, Deep Learning/Machine Learning, Pattern Recognition, Statistical Modeling, Geospatial Analysis, Feature Engineering, Computer Vision, Time Series, Data Analysis, Software Development Lifecycle, and Cloud Computing.

Hard Skills: Python (Pandas, NumPy, Sci-kit learn, TensorFlow, PyTorch, Keras, Matplotlib, etc.), PSS/E, PowerBI, SQL, C++, Arduino, MATLAB, Large Language Models, Raspberry Pi, Linux, Java, Docker, Kubernetes, Nvidia-Triton, REST APIs, LATEX, Git, SAS, Backtrader.