Kelvin Kwakye

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Portfolio: https://github.com/kkkwakye | http://www.kelvinkwakye.com/ |LinkedIn & Google Scholar: kelvin kwasi kwakye

EDUCATION

North Carolina A&T State University — Greensboro, NC
Doctor of Philosophy (Ph.D.) in Industrial & Systems Engineering — Jan 2021 – May 2024
Research Areas: Human factors, Transportation Safety, Autonomous Vehicle, Decision making

North Carolina A&T State University — Greensboro, NC
Master of Science in Industrial & Systems Engineering — Aug 2018 – Dec 2020
Research Areas: Transportation Planning, Transportation Safety,Paratransit, Demand Modelling

Kwame Nkrumah University of Science & Technology — Kumasi, Ghana
Bachelor's in Science Chemical Engineering — Sept 2013 – Nov 2017
Research Areas: Chemical Plant Design, Heat & Mass Transfer

SKILLS SUMMARY

Programming Languages: Python, R, JavaScript, ReactJs, SQL, Matlab
Tools &Platforms: Windows, Linux, AWS, GCP, Azure, Hadoop, Eclipse, Spyder, Jupiter, RStudio, MATLAB, SAS, PyCharm, Tableau, Spark, Pig, Hive, SAP, Android Studio, AutoCAD, Kubernetes, Docker, GIT, PostgreSQL, MySQL, SQLite, Pig, Hive
Frameworks: OpenCV, Fastai**,** Scikit-learn, Numpy, Pandas, Pytorch, Keras, Tensor Flow, GANs, CycleGANs, Yolo-v5
Certifications: Lean Six Sigma Green Belt Certified, Engineering Project Management (Advanced Product Quality Planning), Google Cloud Big Data and Machine Learning Fundamentals
Soft skills: Leadership, Event Management, Writing, Public Speaking, Time Management

ENGINEERING EXPERIENCE

E.B. Fort Interdisciplinary Research Center, NCAT — Greensboro, NC
Research Assistant — Jan 2019 - Date

- Providing timely access to all experimental data for the faculty researcher and supervisor, empowering them to meet deliverables and deadlines

Academic Projects

Machine Learning

- Built a credit card fraud detection model using **logistic regression** with an accuracy of 94.7% whiles the precision and recall are 0.964 and 0.894 respectively
- Conducted **data regression analysis** of the relationship between a company stocks prices and industry trends, achieving 15% more accurate prediction of performance than previous years
- Developed a **Logistic Regression** Model for Breast Cancer Diagnosis Prediction with an accuracy of 88% after PCA
- Movie Reviews sentiment analysis using Naïve Bayes (NLP) for prediction

Deep Learning/Computer Vision

- Implemented **Deep Convolutional Generative Adversarial Network** using PyTorch to generate handwritten digits
- Developed a traffic light detection model using **YOLO v5** and **Deepsort** for tracking
- Developed a traffic anomaly detection model using deep learning powered with decision tree
- Developed a vehicle detection model using **Fastai** architecture with 98% accuracy

Big Data Analytics

- Built Movie recommendation system using Apache Spark 2.0's **Machine Learning Library (Alternating Least Squares (ALS))**
- Analyzed and queried Movie Ratings Using Apache Spark (SQL)

Mobile App Development

- Developed a mobility app using **Android Studio, node.js, Realtime Firebase Database** for vulnerable road users who patronize paratransit enabling them to track buses

Bus Routing Problem

- Used Branch & Cut algorithm to minimize paratransit operation cost in the Greensboro area
- Used Graph Convolutional Neural Network to optimize travel time, distance and costs for paratransit operations

PROCEEDINGS & PUBLICATIONS

- **Kelvin Kwakye**, Younho Seong, and Sun Yi. 2020. An Android-based mobile paratransit application for vulnerable road users. *In Proceedings of the 24th Symposium on International Database Engineering & Applications (IDEAS '20)*. Association for Computing Machinery, New York, NY, USA, Article 28, 1–5. DOI: https://doi.org/10.1145/3410566.3410596. 5 Citations
- **Kwakye, K**., & Dadzie, E. (2021). Machine Learning-Based Classification Algorithms for the Prediction of Coronary Heart Diseases. *arXiv preprint arXiv:2112.01503*. 3 Citations
- Dadzie, E., & **Kwakye, K**. (2021). Developing a Machine Learning Algorithm-Based Classification Models for the Detection of High-Energy Gamma Particles. arXiv preprint arXiv:2111.09496. 5 Citations
- **Kwakye, K.,** Seong, Y., & Yi, S. (2022). Travel Time, Distance and Costs Optimization for Paratransit Operations using Graph Convolutional Neural Network. arXiv e-prints, arXiv-2205. 1 Citation
- **Kwakye, K**., Seong, Y., Aboah, A., & Yi, S. (2023). SigSegment: A Signal-Based Segmentation Algorithm for Identifying Anomalous Driving Behaviours in Naturalistic Driving Videos. arXiv e-prints, arXiv-2304.
- **Kwakye, K**. (2022). Social responsibility considerations for autonomous vehicles implementation: Design and legislature for equity towards vulnerable groups. Available at SSRN 4175764. 2 Citations
- **Kwakye, K**., Seong, Y., Aboah, A., & Yi, S. (2023, October). Classification of Human Driver Distraction Using 3D Convolutional Neural Networks. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Accepted).

LEADERSHIP & AWARDS

- Project Lead, Aggies Auto Autonomous Auto (A3) (2022- Date)
- Innovation Lead, Aggies Auto Autonomous Auto (A3) (2022- Date)
- Social Responsibility Lead, Aggies Autonomous Auto (A3) (2019-2021)
- Vice President, Chemical Engineering Students' Association (KNUST) (2015 – 2016)
- 3rd Placed: Auto Drive Challenge II, Aggies Autonomous Auto, Concept Design, Project Lead (June 2022).
- 4th Placed: Auto Drive Challenge I, Aggies Autonomous Auto, Social Responsibility Lead, (November 2021).
- 2nd Placed: Auto Drive Challenge I, Aggies Autonomous Auto, Social Responsibility Lead, (July 2020)..