Yaa Takyiwaa Acquaah

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PROFESSIONAL SUMMARY

I am a data scientist with 7+ years of experience in analyzing and interpreting complex data sets to drive business solutions. Proficient in using statistical and machine learning techniques to uncover insights and create predictive models. Strong problem-solving skills and experience with programming languages such as Python, R, and MATLAB. Proven ability at communicating findings and recommendations to both technical and non-technical stakeholders. Proven track record of delivering data-driven results in a variety of industries such as nuclear, financial, and transportation.
I have a passion for cooking and I also enjoy spending time with my kids.

EDUCATION

- **Doctor of Philosophy (PhD):** Computational Science and Engineering, 2023, North Carolina A&T State University – Greensboro, NC.
- **Master of Philosophy (MPhil)**: Computational Nuclear Science and Engineering, 2013, University of Ghana School of Nuclear and Allied Sciences – Accra, Ghana.
- **Bachelor of Science (BSc)**: Mathematics, 2009, Kwame Nkrumah University of Science and Technology – Kumasi, Ghana.

PUBLICATIONS

Google Scholar Profile - https://tinyurl.com/ytacquaah

SKILLS, EXPERTISE & TOOLS

- Expert level proficiency in Python and MATLAB programming languages.
- Proficient in RStudio, Mathematica, FORTRAN, and C/C++ programming languages.
- Proficient in Geographic Information System (GIS) and InDesign tools.
- Proficient in SQL.
- Proficient in machine learning frameworks such as scikit-learn, pandas, numpy, xgboost, and pytorch
- Strong knowledge of statistics, data mining, machine learning, simulation, operations research/optimization, econometrics, and information retrieval.
- Strong knowledge of the data science process and practical experience using machine learning algorithms including regression, classification, simulation, scenario analysis, modeling, clustering, and decision trees.
- Strong knowledge of MS Office products.
- Strong written, verbal communication skills and presentation of technical concepts.

PROFESSIONAL EXPERIENCE

North Carolina A & T State University – Department of Computer Science – Greensboro, NC.

Postdoctoral Scholar June, 2023 to current

- Spearheading research on anomaly detection in Cyber-Physical Systems, resulting in innovative methodologies and improved detection accuracy.
- Developing and implementing machine learning models for anomaly detection that significantly reduced false positives and enhanced system reliability.
- Continuously constructing and optimizing frameworks for synthetic dataset generation to accelerate testing cycles and validate model performance.
- Sharing research findings through publications and presentations at leading conferences and symposia.
- Guiding and mentoring students in cutting-edge research techniques, fostering the next generation of innovators.
- Overseeing lab management, ensuring optimal resource allocation and streamlined workflow processes to support ongoing research projects.

N.C.A.T. AI & VI Lab – Greensboro, NC

Graduate Research Assistant Jan. 2020 – May, 2023.

- Developed a Machine Learning model for simulating the average room temperature in a laboratory using Infrared-based thermal images.
- Built a text mining application that extracts data on metal composition and tensile properties of Magnesium Alloy from Scientific Articles to facilitate the creation of a database with sufficient data to conduct training of machine learning models which will accurately predict ductility for bullet proof vest production.
- Developed a YOLOv5 model to detect the human eye in thermal image and extract the temperature for fever detection.
- Developed a multi-output regression model to predict high blood pressure rate, high cholesterol rate, and obesity rate using population, income class, and transportation accessibility as independent variables.

Vanguard – Malvern, PA

Data Scientist Intern Jun. 2021 – Aug. 2021

- Developed a Rolling Regression model by using alternative datasets such us rental and housing data to provide a better real time prediction of Owners' Equivalent Rent (OER) and Rent of Shelter Inflation.
- Applied the Rolling Regression model to analyze the changing relationships among variables of the identified alternative housing data over time and to predict an early and accurate OER inflation.
- Mentored 6 international teams of a combined 35 Vanguard employees for the 2021 Investment Management Fintech Strategy (IMFS) data science competition.

North Carolina DOT – Raleigh, NC

Data Analyst Intern May. 2019 – Jul. 2019

- Developed Multinomial and Ordinal Models to predict crash severity for Bicyclist and Pedestrian Crashes across Highway Divisions 13 and 14 of North Carolina (Accepted for TRB 2020 Annual Meeting Poster Session Presentation).
- Conducted hotspot analysis to identify hotspots for North Carolina roadways where a high percentage of pedestrian and bicyclist crashes occurred and proposed solutions for improvement.

N.C.A.T. Park Lab – Greensboro, NC

Graduate Research & Teaching Assistant Aug. 2018 – Dec. 2019

- Developed a multivariate regression model with interactions to predict the discrepancy in travel time of paratransit using explanatory variables including distance, speed limit, traffic signals, peak hour, and whether the individual is picked up or dropped off at home.
- Taught MATLAB and Mathematica to undergraduate students at the N.C.A.T. Biological Engineering department.