Godfred Somua – Gyimah, PhD

godfred.s.gyimah@gmail.com ● Saint Louis, MO ● (573) 201-7316 ● github: ggyimah1031 ● linkedin.com/in/godfredsomuagyimah

Legal Status: US Permanent Resident **Website: https://ggyimah1031.github.io/godfredgyimah/**

Work Experience

BAYER AG — Saint Louis, MO

Research Data Scientist, *January 2018 to present (2+ years)*

❖ ***Technical Lead (Vegetables R&D), January 2019 to present***

- Translating business problems into research questions for exploratory, descriptive, predictive and prescriptive analytics.
- Collaborated with business leaders constantly to update / agree on project goals and expectations. Created visualizations to communicate model results to both technical and non-technical audiences.
- Leading the development of an end-to-end pipeline for generating different vegetable phenotype metrics from UAV imagery.
- Developed a three-stage model for automating weed control ratings in herbicide trial fields by combining UAV image processing, Mask R-CNN semantic segmentation and XGBoost regression.
- Perform model deployments and model performance monitoring.
- Coach, lead, guide and manage projects of junior data scientists.

❖ ***Project Lead (Vegetables R&D), January 2018 to January 2019***

- Developed a dryer recommender model for optimizing seed quality with ~98% acceptable performance using Random Forest.
- Developed a Logistic Regression model for predicting the failure of seed dryer fan engines with ~93% failure accuracy.
- Developed a VGG16 deep learning imaging model for seed vigor prediction with ~99.6% sensitivity and ~90.1% specificity using Python and Keras. Developed seed clustering insights using the K-Means algorithm in Jupyter Notebook.
- Performed model deployments and model performance monitoring.

INSIGHT DATA SCIENCE — Manhattan, NY

Artificial Intelligence Fellow, *July – December, 2017 (6 months)*

- Developed a ResNet50 model for diagnosing seven skin diseases (actinic keratosis, basal cell carcinoma, dermatofibroma, melanoma, nevus, pigmented benign keratosis, vascular lesions) with ~87% accuracy using the ISIC 2016 dataset.
- Replicated the Fully Convolutional Neural Network for Cardiac MRI Segmentation by Tran, 2017 with ~85% test accuracy.
- Implemented the 3D CNN action recognition model by Schindler et al. (2008) with ~89% accuracy using Python and Keras.
- Developed RNN models for NLP tasks such as named entity recognition and sentiment analyses.

MISSOURI UNIVERSITY OF SCIENCE & TECHNOLOGY — Rolla, MO

Doctoral Researcher (Problem-solving, Machine Learning & Analytics)*, August 2014 – June 2018 (4 years)*

- Developed and validated a novel method for calibrating DEM parameters using the XGBoost Machine Learning algorithm. The method combines simulation of tri-axial rock testing with XGBoost to achieve prediction accuracies of up to 95.54%.
- Developed a deep learning model for machine vision in mining and construction environments using Single Shot Detection and the Tensorflow object detection API. The model achieved over 90% performance upon pilot phase testing.
- Developed and validated a 3D numerical model for studying the failure patterns of geomaterials during rock excavations.

HUAWEI TECHNOLOGIES — Accra, Ghana

Engineering Analyst / Costumer Analytics Manager, *May 2010 – September 2013 (3.5 years)*

- Provided formal mentoring and leadership to a team of 5 analysts. Led exploratory, descriptive and predictive customer analytics studies to discover insights and opportunities. Led end-to-end analytic projects for revenue forecasting, customer segmentation, customer churn and sentiment analyses. Made presentations to technical and non-technical audiences.
- Partnered with internal clients to provide business intelligence / insights from customer data on telecom products. Produced exploratory and descriptive analytics for customer segmentation, sales promotion and targeted marketing. Interfaced with clients and created visualizations to communicate analyses / recommendations.

Education

MISSOURI UNIVERSITY OF SCIENCE & TECHNOLOGY — Rolla, MO

- ***PhD Mining Engineering*** *(GPA: 4.0 / 4.0)* — Aug. 2014 – June 2018
- ***Graduate Certificate, Business Analytics & Data Science*** *(GPA: 4.0 / 4.0)* — Aug. 2016 - May 2017

(Courses: Data Mining & Machine Learning, Data Visualization, Text Mining, Business Analytics & Data Science)

- ***MS Mining Engineering*** *(GPA: 4.0 / 4.0)* — Aug. 2014 - July 2016

UNIVERSITY OF LEEDS — Leeds, England

- ***MS Engineering Geology*** — Sep. 2013 – Aug. 2014

KWAME NKRUMAH UNIVERSITY OF SCIENCE & TECHNOLOGY — Kumasi, Ghana

- ***BS Civil Engineering*** — Aug. 2006 - June 2010

Technical Skills (Analytics Tools)

- ***Languages*****:** Python, R, SQL, NoSQL, Matlab
- ***Statistics, Machine Learning & Deep Learning*****:** Tensorflow, Keras, Scikit-Learn, Caret, Weka, Azure ML, Amazon ML, DataRobot, NLTK, NumPy, SciPy, SAS Text Miner, RStudio, H2O
- ***Data Wrangling & Storage*****:** MySQL, Apache Hive, Pandas, R Dataframe, Trifacta, MongoDB, Cassandra, HDFS
- ***Data Visualization*****:** Tableau, Power BI, ggplot2, matplotlib
- ***Cloud Computing:*** AWS, GCP, MS Azure, Domino, Paperspace
- ***Other skills:*** Jupyter, Git (github, bitbucket), Flask, Docker, Kubernetes, Apache Hadoop, Apache Spark, JIRA, Trello

First Author Publications

- **Somua-Gyimah, G**., et al., A machine learning approach to Distinct Element Model calibration for earth material. International Journal of Constructive Research in Civil Engineering. 2020. In Press.
- **Somua-Gyimah, G**., et al., Formation fragmentation modeling and impact on dragline excavation performance in surface mining operations. International Journal of Mining Science, 2019. Volume 5, Issue 1: p. 11-21. [PDF]
- **Somua-Gyimah, G**., et al., A Material Flow Model for Dragline Bucket-Formation Failure Analyses Using the Distinct Element Method. International Journal of Mining Engineering and Technology, 2018. 1(1): p. 1-15. [PDF]
- **Somua-Gyimah, G.** Dragline Excavation Simulation, Real-Time Terrain Recognition and Object Detection. PhD Dissertation. Missouri University of Science & Technology. 2018. [PDF]
- **Somua-Gyimah, G.** Finite Element Modeling of The Proposed Tunnel for the York Potash Mineral Transport System. MSc Thesis. University of Leeds. 2014. [PDF]
- **Somua-Gyimah, G**., et al., A computer vision system for terrain recognition and object detection tasks in mining and construction environments. Proceedings of the 2019 Annual Conference of the Society for Mining, Metallurgy & Exploration (SME). 2019. In Press. [Preprint - PDF]