

William E. Jarrard

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EDUCATION

University of Virginia School of Data Science, Charlottesville, VA *Class of 2022*

GPA 3.89: **Title:** MS, Masters of Data Science

Activities: MSDS Admissions Ambassador; Co-Founder of Sports Analytics Club, Rock Climbing Club

University of Virginia School of Engineering and Applied Science, Charlottesville, VA *Class of 2021*

BS, With High Distinction: **Major:** Systems Engineering w/ pre-medical course work

Activities: Swim Club, Mad House Volunteering, Online Tutoring During the COVID-19 Pandemic

SKILLS and TECHNIQUES

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- **Languages and Packages:** Python, R, SQL, Shell, Pytorch, TensorFlow/Keras, PySpark, Pandas, Matplotlib, Numpy, Scikit-learn, Tidyverse, Tableau, git, AWS, Terraform
 - **Domain Knowledge:** Regression, classification, supervised/unsupervised learning, image classification, object detection, RNN's, transformers, scalable ML, linear algebra, calculus, probability, statistics

WORK EXPERIENCE

Data Scientist Researcher for CGHE, University of Virginia Hospital *Summer 2021*

- Created a method for extracting features such as drug names from paper medical sheets by implementing YOLO for segmentation and classification, and LSTMs for capturing the sequential nature of drugs
- A top-1 accuracy of 61.98 and a Macro F1 score of 0.57
- Created a simulation of a hospital using queuing theory (python library Simpy) in Rwanda to do stress tests to explore implications of overflow of patients and learned about the different bottlenecks in the hospital.

Devops/ Data Science Intern, Propeller Health *Summer 2019, 2020*

- Improved air quality and weather data sets for machine learning and forecast models – created novel baseline air quality prediction
- Created an automated alert system to send messages to Slack when services in AWS crash which helped the company improve response times over 72% in off hours. Used services such as Lambda, EC2, S3, IAM, Cloudwatch, Cloudtrail, and ECS.

PUBLICATIONS

“Handwritten Text and Digit Classification on Rwandan Perioperative Flowsheets” 2021, IEEE.

- See first two points under Data Scientist Researcher for CGHE.

“UTX condensation underlies its tumour-suppressive activity” 2021, Nature.

- Novel study of how condensation of certain proteins (UTX) in cells can decrease its ability to combat cancer formation.

“A User Interface Informing Medical Staff on Continuous Indoor Environmental Quality to Support Patient Care and Airborne Disease Mitigation” 2021, IEEE.

- Analyzed and created an interface to record indoor environmental quality (IEQ) that informed medical staff to help support patient care and airborne disease mitigation.

SIDE PROJECTS

Predicting Music Genre with Song Lyrics using Statistical Learning Methods, GRU's and BERT

- Web scraped song lyrics to predict songs genres utilizing statistical learning methods such as multinomial logistic regression, naive bayes and linear SVC. Also utilized newer deep learning NLP methods such as GRU's, CNN's, basic transformers, and BERT with a total accuracy of 74% and an F1 Macro of 0.75

Building Identification Model using Transfer Learning of CNNs

- Used transfer learning of a ResNet model to identify photos of different buildings (mix from online and ones I took) at UVA with over 91% top-1 accuracy.

Clothes Recommendation System Using Collaborative Filtering

- Created a recommendation system in PySpark using ALS modeling and association analysis to recommend clothes a person is likely to buy next.

Portfolio: <https://willjarrard.com>