Julianne Zech

jkz13@georgetown.edu 203-858-5612 JulianneZech julianne-zech juliannezech.github.io

Education

Georgetown University | *B.A. Computer Science and Mathematics, GPA: 3.89 / 4.00* **May 2020**

- **Clare Boothe Luce Academic Scholar:** Earned 2019 - 2020 full tuition scholarship of $55,794 for female STEM researchers
- **Sample Computer Science Courses:** Algorithms, Advanced Java Programming, Artificial Intelligence, Big Data Analytics with Spark, C++ Programming 1 and 2, Data Mining, Data Structures, Network Security
- **Sample Mathematics Courses:** Applied Statistics, Linear Algebra, Probability and Statistics, Time Series Analysis in R

Experience

Georgetown University Data-Centric Computing Lab, Washington, DC | *Research Assistant* **January 2019 - Present**

- Implemented naïve bayes and logistic regression algorithms in Python to classify #MeToo tweets as experiential or non-experiential using text mining and natural language processing techniques such as lemmatization, dense feature extraction, and word embedding
- Deployed scalable data processing pipeline on Google Cloud Platform to run trained models on 10 million tweet test set
- Engineered software programs using PySpark to compute frequencies of occupations and universities mentioned in #MeToo tweets
- Analyzed differences between subset labeled as experience and subset labeled as non-experience by performing SQL queries in BigQuery, mapping experience tweet timestamps to #MeToo movement events, and creating visualizations with Tableau
- Presenting poster with initial results at IEEE's International Conference on Data Science and Advanced Analytics in October 2019
- Building classifiers to detect personal experience tweets versus tweets about someone else's experience and writing a senior thesis to be submitted to computer science journals for publication in spring 2020

Georgetown University Department of Computer Science | *Teaching Assistant, Data Structures* **August 2019 – Present**

- Hold 5 weekly office hours and grade homework, projects, and exams for 60 students

Greenwich Associates, Stamford, CT | *Data Analytics Intern* **May 2018 – July 2018**

- Constructed statistical graphs in QlikView using survey data from 3,000+ institutional investors evaluating their asset managers
- Produced 16 presentations used by consultants in annual meetings with asset management clients explaining industry trends, showcasing data models, and delivering customized business insights
- Debugged and tested 124-page web survey applications and cleaned data sets in Excel and R in preparation for further analysis

Projects

Independent Stock Price Machine Learning Model **March 2019 – Present**

- Implemented machine learning model in Python to forecast 1-month stock prices using lasso and ridge regularized linear regression, tree-based methods, and an ensemble model (motivated by interest in modeling high-dimensional financial data)
- Optimized hyperparameters for each model using grid searches and compared individual performances with 5-fold cross-validation
- Created pipeline to track investment performance of a portfolio containing stocks with top 40 returns predicted by model
- Presented a version of the project in the FinTech track of HackGCL competition at CapitalOne and won $100 best pitch prize

Independent Data Science Projects **May – August 2019**

- Designed 6 ggplot visualizations and shiny applications on raw and transformed data from public sources to build familiarity with R packages and hone data manipulation and data interpretation skills

Data Mining Course Projects **January – May 2019**

- Taught myself to code in Python and to manipulate data using numpy and pandas to complete class projects more effectively
- Developed entropy-based discretization, naïve bayes, neural network, and association rule mining algorithms from scratch
- Achieved 86% 5-fold cross-validation F1 score for supervised learning classifiers, outperforming simple baseline majority by 10%

Leadership

- **GU Women Coders Campus Outreach Director:** Devise and deliver 6 coding lessons and workshops per semester to audiences of up to 130 students and collaborate with 12 board members to increase participation of women in technology on campus
- **Computer Science Student Committee Representative:** 1 of 3 majors in class elected by peers and faculty to recommend curriculum and student resources improvements to the Department Chair

Skills

- **Languages:** C++, Java, Python (pandas, pytorch, nltk, numpy, scikit-learn, seaborn), R (dplyr, ggplot, shiny), Scala, SQL
- **Technologies:** BigQuery, Git, GCP (Google Cloud Platform), MySQL, Tableau, QlikView, Unix/Linux

Awards

- **Georgetown Undergraduate Research and Opportunities Program Summer Fellow:** Won $3,000 summer research fellowship and was 1 of 2 female applicants selected to receive $2,000 in additional funding based on research potential
- **Georgetown Computer Science Department GHC Scholar:** 1 of 3 majors funded to attend 2019 Grace Hopper Celebration