Julianne Zech

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Education

Georgetown University B.A. Computer Science and Mathematics; GPA: 3.89 / 4.00, Graduating 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 & 2, Data Science, Data Mining, Data Structures, Network Security
- **Sample Math Courses:** Applied Statistics, Linear Algebra, Probability and Statistics, Real Analysis, 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 noisy #MeToo tweets as experiential or non-experiential using text mining and natural language processing techniques such as lemmatization, dense feature extraction, sentiment analysis, and word embedding; achieved 80-85% 10-fold cross-validation accuracy
- Deployed scalable data processing pipeline on Google Cloud Platform to run trained models on data set with 10 million tweets
- Engineered software programs using PySpark to compute counts 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
- Building classifiers to detect personal experience tweets versus tweets about someone else's experience and writing a paper 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**

- Developed 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 web survey applications and cleaned data sets in Excel and R in preparation for further analysis

Projects

Independent Stock Price Machine Learning Model

- Implementing machine learning model in Python to forecast 1-month stock prices using lasso and ridge regularized linear regression, gradient boosted trees, extremely randomized trees, random forests, and deep neural networks (motivated by interest in exploring advanced regression techniques and fitting models to high-dimensional financial data)
- Structuring code to compare individual model performance after hyperparameter optimization and construct ensemble classifier
- Creating pipeline to reproduce analysis on new data and will publish methodology, visualizations, and results in Jupyter notebook
- Presenting finished project in the FinTech competition track of Hack GCL at CapitalOne in September 2019

Independent Data Science Projects

- Designed a series of 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

- Developed naïve bayes, neural network, and association rule mining algorithms from scratch; taught myself to program in Python and to manipulate data using numpy and pandas
- Achieved 80% 5-fold cross-validation accuracy for supervised learning classifiers and produced documentation with scores for classification metrics, justification of design decisions, and analysis of time and space efficiencies

Leadership

- **GU Women Coders Campus Outreach Director:** Devise and deliver coding lessons and workshops for beginner and intermediate students to encourage participation of women in technology on campus
- **Computer Science Student Advisory Committee Representative:** Recommend curriculum and student resources improvements to the Department Chair (1 of 3 computer science majors selected by faculty)

Awards

- **Clare Boothe Luce Research Scholar:** 1 of 2 Georgetown undergraduates to win $5,000 summer research grant
- **Georgetown Computer Science Department GHC Scholar:** 1 of 3 students funded to attend 2019 Grace Hopper Celebration

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, Spark (MLlib, Spark SQL), Tableau, QlikView, Unix/Linux