Curriculum Vitae

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Education

August 2017— May 2021

Degree: Bachelor of Science in Applied Math and Statistics
Where: Emory University, Atlanta, GA
GPA: 3.83 of 4.0
Double Major in Computer Science
Completing Honors Thesis in Applied Math
Research Interests: Scientific Computing, Optimization, Machine Learning, Numerical Analysis, and Inverse Problems

Research

July 2020— Present

Project: Tomographic Image Reconstruction (Honors Thesis)
Where: Emory University, Atlanta, GA
Advisor: Dr. James G. Nagy
Contributions:

- I adopted the Block Coordinate Descent algorithm to solve for image and source-to-object distance respectively in each iteration. The method converges very fast for small test problems.
- I used the hybrid LSQR method from Dr. James G. Nagy's IRTools package that combines Tikhonov regularization with standard LSQR to solve for the image.
- I used a hybrid of projected quasi-Newton and Gauss-Newton algorithms from Dr. C.T. Kelley's (NC State) Imfil package to approximate the geometry parameters.
- By leveraging separability in the geometry parameters, I improved the performance 4-5 times. Parallel computing will speed up the algorithm even more.
- I am currently investigating other optimization methods and acceleration algorithms that can further improve our performance.

September 2019— May 2020

Project: Chinese Public Opinion on Trump's America (Text Analysis)
Where: Emory University, Atlanta, GA
Advisor: Dr. Holli A. Semetko
Contributions:

- I adopted and re-developed an existing web scrapping package to mine relevant content from Weibo, the Chinese equivalent of Twitter.
- By tokenization, lemmatization, and removing stop words, I cleaned more than 8000 Weibo posts and prepared it for vectorization.

- I vectorized the data using tf-idf and implemented unsupervised machine learning model such as k-means clustering and latent Dirichlet allocation to classify texts and identify topics.

Projects

October 2020— December 2020

Project: Covid-19 Literature Classification and Keyword Analysis
Where: Emory University, Atlanta, GA
Advisor: Dr. Gordon J. Berman
Contributions:

- I utilized a mix of tf-idf score and frequency score to identify keywords in the existing academic papers on covid-19.
- I implemented Long Short Term Memory networks (LSTMs) to predict the frequency of the most important keywords in the covid-19 literature.
- I conducted sentiment analysis to label the existing corpus.

March 2020— May 2020

Project: Modeling the Spread of Covid-19
Where: Emory University, Atlanta, GA
Advisor: Dr. Alessandro Veneziani
Contributions:

- I adapted and modified the existing Susceptible, Infected, and Recovered (SIR) model by including asymptomatic patients and deceased patients in the new system of ordinary differential equations (SAYRD - Susceptible, Asymptomatic, Symptomatic, Recovered, and Death).
- I relaxed the assumption of fixed population in the SIR model, discretized the U.S territory, stored traffic information in matrices, and proposed modified matrix ODEs of the SAYRD model.
- I completed a 20-page report on the spread of covid-19 with three group members. Our prediction started in May 2020 and ended in October 2020. The predictions aligned with the trend of the real data in the U.S. Our model showed back in May 2020 that there would be 10M cases in the U.S in October 2020.

Teaching

January 2020— May 2020

Position: Project Team Lead
Where: Quantitative Theory and Methods Department, Emory University

I was the project team lead of the Emory Data Science Club under the QTM department. I conducted weekly workshops in python in the spring semester of my junior year. Topics include, but not limited to, basic data structures, exploratory data analysis, and simple text analysis projects.

Working

May 2019— July 2019

Position: Data Science Intern
Where: Becton Dickinson, Caesarea, Israel

I implemented a binary classification algorithm using logistic regression to predict employee absence at BD's factory in Caesarea, Israel. I interpreted the statistical results for my manager and used Tableau to visualize sales & production trends in the company.

Leadership

May 2018— May 2020

Position: Founder and President
Where: Emory Global China Summit, Atlanta, GA

I founded the Summit to connect people from academia, business, and government in the U.S and China to have open dialogues on Sino-U.S relations. The first annual conference in collaboration with the Carter Center, Institute for China America Studies, and more than ten other organizations was hosted during $2019/01/17 - 01/19$. During the three-day's event, it attracted more than 1000 attendees along with 55 guest speakers including President Jimmy Carter and Tiankai Cui, the Chinese Ambassador to the U.S.

October 2017— September 2020

Position: Project Team Lead, Vice President, Director of Development
Where: Emory Data Science Club, Atlanta, GA

The positions are listed from the most recent to the least. During my three years in the club, I was responsible for connecting the club to NGOs for collaboration on data projects, hosting panels that featured industry experts and alumni, and leading the project team to complete interesting data science projects.

Technical experience

TensorFlow/Keras, Linux shell, Python, LaTeX, Java, Matlab, R

Honors and awards

- Research Fellowship (Emory Quantitative Theory and Methods Department, 2019)
- Math Honors Program (Emory University, 2020)
- iXperience Study Abroad Scholarship in Israel ($5000)