Gene Li

1508 Forest Garden Dr.
Brentwood, TN 37027
Cell: (615) 887-5321

4564 Frist Campus Center
Princeton, NJ 08544-1156
Email: gxli@princeton.edu

EDUCATION

Princeton University, Princeton, NJ **Jun. 2019**
Bachelor of Science in Engineering, Electrical Engineering
Certificate: Statistics and Machine Learning
Overall GPA: **3.95/4.0**; Department GPA: **4.0/4.0**

Relevant Coursework: Algorithms and Data Structures, Differential Equations, Statistical Signal Processing, Machine Learning, Probability in High Dimensions*, Information Theory, Optimization for Data Sciences*, Natural Language Processing*
(* denotes graduate level course)

Research Interests: Optimization, High Dimensional Statistics, Random Matrix Theory, Natural Language Processing.

ACADEMIC HONORS AND AWARDS

Shapiro Prize for Academic Excellence **Sep. 2017**
- Awarded to top 47 out of ~1300 students in the sophomore class for academic achievement.

Tau Beta Pi National Engineering Honor Society **Sep. 2017**
- Awarded to top 1/8 of engineering students in class of 2019.

US Presidential Scholars Program, Washington, D.C., *Presidential Scholar* **Jun. 2015**
- Recognized before Secretary of Education Arne Duncan as one of 120 US high school seniors for top academic achievement.

Mathematical Association of America **Apr. 2014**
- United States of America Math Olympiad (USAMO) Qualifier.
- Only junior from TN to qualify among 261 students nationwide.

RESEARCH EXPERIENCE

Lazy Random Walk Preprocessing for Word Embeddings **Jan. 2018 – Present**
Advisor: Emmanuel Abbe, Princeton University
- Proposed a simple preprocessing trick to improve the analogy solving capability of Pointwise Mutual Information (PMI) based word embeddings by as much as 13 percentage points.
- Investigated theoretical justifications for such performance increase.

Divided We Tweet: A Dataset for Community Detection **Nov. 2016 – May 2017**
Advisor: Emmanuel Abbe, Princeton University
- Extracted Twitter graph of connections between prominent political journalists using Twitter API.
- Implemented community detection algorithms on benchmark political blog dataset (Adamic & Glance 2005) as well as above dataset. These algorithms included spectral algorithms, semidefinite programming, and an acyclic belief propagation algorithm to partition nodes based on political affiliation with Python and MATLAB.
- Compared accuracy of algorithms against theoretical bounds for detection in the stochastic block model (SBM).

ENGINEERING EXPERIENCE

Microsoft Corporation, Boston, MA, *Software Engineering Internship* **May 2018 – Aug. 2018**
- Developed chaos engineering tool for testing Azure Machine Learning services, i.e. wreaking havoc on system to empirically measure resilience of the system to unexpected failures.
- Tool allows developers to specify chaos "experiments" which can be run weekly and generate bug reports.
- Using Uber Horovod, developed a decentralized distributed machine learning framework for Kubernetes clusters.

ELE 302 (Building Real Systems), Princeton University, *Course Project* **Feb. 2018 – May 2018**
- Built hardware for and programmed a robotic car to: 1) travel at constant velocity on varying slopes 2) follow a black line track on the ground.
- Implemented a "find-and-go-seek" algorithm, motivated by lock-in amplification techniques, on omni-bots with pairwise distance sensors attached to them that would allow them to find each other on the floor.

Citadel LLC, Chicago, IL, *Software Engineering Internship* **Jun. 2017 – Sep. 2017**
- Worked on the Global Commodities Tech team to build out critical infrastructure for use by traders and analysts.
- Streamlined process for managing/updating futures metadata and pricing by building a Python API to replace legacy system of executing raw SQL queries. Built Flask server that exposes endpoints for said API.

- Migrated and improved upon existing configurations for monitoring long-running Linux processes with Monit to a more data-centric, version-controlled system.
- Created visualizations of the CFTC Commitment of Traders data for traders to use in weekly decision making.
- Built backtesting framework for the Volatility desk to visualize performance of options spreads against historical data.
- Used proprietary C++ library to calculate volatility and options greeks, after which metrics such as risk/PNL, max drawdown, Sharpe ratio, etc. are calculated and displayed in the UI.

VUSE Summer Research Program, Vanderbilt University, TN, *Summer Internship* **May 2016 – Aug. 2016**

- Built Android app in collaboration with the Metro Nashville Police Department for use in day-to-day patrols.
- Implemented features for immediate visualization of nearby police, crime hotspots, and on-call crimes.

TEACHING EXPERIENCE

Department of Computer Science, Princeton University, *Lab TA* **Fall 2017 – Present**

- Teaching assistant for introductory computer science classes (COS 109/126/217/226).
- Helped students by debugging assignments and explaining concepts.
- Time commitment: 4 hours/week.

ACTIVITIES

US Presidential Scholars Program, *Advisor* **Jun. 2016 – Jun. 2019**

- Organized National Recognition Program, a 3-day program for high school students in mid-June.
- Responsible for transportation of ~160 students, as well as planned and executed logistics for recognition ceremonies and fun icebreaker events.

Princeton Sports Analytics, *President* **Fall 2016 – Present**

- Wrote and edited articles for publication on princetonsportsanalytics.com
- Organized speakers and career meetups for students interested in sports analytics careers.

Princeton SEAS Tour Guide **Spring 2016 – Present**

- Led hour-long tours every week for prospective students and their families, explaining Princeton's 6 engineering departments.

Princeton Model UN Conference, *Committee Chair* **Fall 2015 – Fall 2017**

- At event for high school students, organized 40-person committee which discussed issues involving the African Union.
- Moderated 3-day discussion on topics like armed conflict and infectious disease.

SKILLS/INTERESTS

Programming Languages: Java, Python, C, R, SQL, MATLAB, LaTeX
Foreign Languages: Chinese, Latin
Miscellaneous: coffee, NBA/NFL analytics, powerlifting