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Baqiao Liu

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EDUCATION

Stony Brook University   Aug 2020 – (May 2022)
M.A. in Mathematics   Stony Brook, NY
Organizations: Association for Women in Mathematics, oSTEM

University of North Carolina at Chapel Hill   Aug 2016 – May 2020
B.S. in Computer Science | B.S. in Mathematics with Honors   Chapel Hill, NC
GPA (CS Major): 3.78/4.00   **Honors**: Dean's List, Carolina Research Scholar   **Minor**: Linguistics
Graduate Courses: Algorithm Analysis, Cryptography, Computational Geometry
Undergraduate Courses: Modern Web Programming, Machine Learning, Data Structures, Computer Organization

PROJECTS

Full Stack Shopping Assistant Web App | Link
- Designed and implemented a web app providing price search service and trend analytics for second-hand sellers and buyers
- Developed an **Ajax** based single-page application frontend using **React.js**, **React Router** and Bootstrap 5
- Developed unofficial API for major second-hand marketplaces with scraped data using **Cheerio**
- Implemented **REST** backend with user authentication using **Node.js**, **Express.js**, **MySQL** and **Firebase**
- Automated the deployment of the web app using **Heroku** and **Netlify**

Full Stack Dorm Rating Web App
- Designed and implemented a Yelp style website that supports user login, browsing, posting, and editing reviews for university dorms
- Developed an interactive frontend with Bulma and **jQuery**, and incorporated ArcGIS API to display location of dorms
- Created **REST** backend with user authentication middlewares using **Node.js** and **Express.js**

Evaluating Gerrymandering
- Implemented reverse search algorithm in **Python** to enumerate connected partitions of graphs and improved the running time of an existing algorithm by 30 times to evaluate gerrymandering
- Applied the algorithm to North Carolina election data to enumerate over 1000 valid congressional district maps within 3 seconds, analyzed results using **pandas** and rendered visualizations with **Matplotlib**

Sushi Game   • Created a sushi restaurant themed game with **Java Swing** incorporating the **MVC** model

EXPERIENCE

Teaching Assistant | Stony Brook University   Aug 2020 – present

Learning Assistant | University of North Carolina at Chapel Hill   Aug 2017 – May 2020
- Assisted teaching and coordinating six undergraduate courses totaling over 1500 students on topics including **Python** basics, **NumPy**, **Java** basics, **OOP**, **machine learning**, and **algorithm** analysis
- Worked in teams to design and grade assignments and projects; led weekly recitations

SKILLS

Programming	Python, Java, JavaScript, SQL, HTML/CSS, C, C#, LaTeX, MATLAB
Tools	Eclipse, Git, Heroku, Mathematica, Visual Studio Code, Unity
Frameworks/Libraries	React.js, Express.js, MySQL, Cheerio, Firebase, Node.js, jQuery, Keras, NumPy, pandas, JUnit
Mathematical Skills	Linear Algebra, Probability, Numerical Analysis, Calculus, Number Theory, Combinatorics