Alena Zhang

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EDUCATION

Duke University, Trinity College of Arts and Sciences **Expected: May 2024**
Intended: Bachelor of Science in Computer Science | Bachelor of Science in Economics Durham, NC

- GPA: 4.0/4.0 | Relevant Coursework: Data Structures and Algorithms, Computer Architecture, Discrete Math for Computer Science
- **Awards:** Duke SPIRE (STEM Pathways for Inclusion, Readiness, and Excellence) Fellow (2020)

Westwood High School **Aug 2016 – May 2020**
GPA: 4.0/4.0 | Rank: 3/655 | SAT: 1590/1600 Austin, TX

- **Awards:** National Merit Scholarship Winner (2020), U.S. Presidential Scholar Semifinalist (2020), National AP Scholar (2020)

WORK EXPERIENCE

NASA STEM Enhancement in Earth Science **Jul 2019**
Summer Intern Austin, TX

- Generated graphs of satellite data using **Python**'s **Matplotlib** and **NumPy** library for 24 locations that experienced natural disasters
- Identified gaps in the data to determine important time frames during natural disasters that the satellite was unable to capture
- Formulated solutions to improve the satellite's ability to assess the impact of natural disasters and inform of possible response measures
- Showcased the effectiveness and feasibility of a solution involving a satellite constellation to NASA scientists in a 30-minute presentation

PROJECTS

Forest Cover Classification **Dec 2020 - Jan 2021**
Deep Learning Model Austin, TX

- Developed a model to predict forest cover type based on various cartographic variables (e.g. soil type, elevation) with **TensorFlow**
- Designed the model architecture by adding hidden layers and tuning hyperparameters to obtain a classification accuracy of 88%

Ravenous **Dec 2020 - Jan 2021**
React App Austin, TX

- Programmed in **JavaScript**, **HTML**, and **CSS** to create a website that allows users to search for nearby restaurants/businesses
- Interacted with Yelp and Google Maps APIs to retrieve businesses based on searches and implement autocomplete for search bars

Huffman Coding **Nov 2020 - Dec 2020**
Data Structures and Algorithms Class Project Durham, NC

- Programmed in **Java** to implement Huffman coding algorithms for the compression and decompression of text and image files
- Determined encodings for each byte of input data by creating a Huffman tree based on the frequency of each byte in the file

Percolation **Oct 2020 - Nov 2020**
Data Structures and Algorithms Class Project Durham, NC

- Programmed in **Java** to create a Monte Carlo simulation to estimate the value of the percolation threshold in a random system
- Implemented breadth-first-search, depth-first-search, and union-find and analyzed space-time trade-offs of these approaches

Unit Converter App **Jan 2020 - Apr 2020**
Native Mobile App Austin, TX

- Programmed in **Dart** to build a Flutter app compatible with iOS and Android that converts units in 8 categories
- Designed an interactive user interface, created stateful widgets, and retrieved API data with guidance from Udacity helper code

Texas Electric Cooperatives (TEC) Membership Due Calculator **Dec 2019 - Mar 2020**
Client-Based Project Austin, TX

- Programmed in **Java** and **JavaFX** to create a desktop application that calculates yearly membership dues for the 75 members of TEC
- Designed algorithms to calculate dues based on their annual number of electric meters served, profit, and member status
- Built an interface that allows users to enter due-related information and generate yearly invoices to send to members of TEC

Implementation of Blockchain Technology in Cross-Border Transactions **Jun 2019 - Mar 2020**
Self-Initiated Research Austin, TX

- Investigated the potential of blockchain technology to improve efficiency and reduce the risk associated with international transactions
- Analyzed the strengths and weaknesses of 3 existing models that adopted blockchain technology into financial systems
- Devised a method of implementation that maximized speed, affordability, and security and summarized findings in a 4000-word essay

LEADERSHIP & ACTIVITIES

Duke Women in Tech **Aug 2020 - Present**
Publicity Chair Durham, NC

- Created weekly tech newsletters about professional development opportunities inside and outside of Duke for over 150 clubs members
- Maintained the club's social media presence, promoted club events on Facebook, Instagram, and Slack, and designed the club website

Duke Business Oriented Women **Oct 2020 - Present**
First-Year Member Durham, NC

- Selected through a competitive application process to join Duke's premier women's pre-professional organization
- Participated in skill-building workshops, general body meetings, and guest speaker events with industry professionals three times a week

SKILLS & INTERESTS

- **Skills:** Java, Python, C, HTML/CSS, JavaScript, React, SQL, R, Dart, TensorFlow, Git | **Languages:** Mandarin, French
- **Interests:** Going on food tours in big cities, playing the flute, baking soufflés, playing card games