

# Alanna Qiu

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Current computer science/cognitive science student looking to contribute my dedication, coding and algorithm design skills in C++ and Python, and meticulous object oriented programming in the development of software applications.

## EDUCATION AUG 2022 - PRESENT

**JUNIOR IN COMPUTER SCIENCE AND COGNITIVE SCIENCE (COMPUTATIONAL TRACK), UNIVERSITY OF MICHIGAN COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS**

- Co-leader of Female Gayo, a K-Pop dance club

## ACADEMICS AND HONORS

- 3.96 GPA
- University Honors: Fall 2022, Winter 2022, Fall 2023
- William J. Branstrom Freshman Prize
- James B. Angell Scholar

## COURSEWORK

- Completed these courses that use C++ programming: Elementary Programming Concepts, Programming and Data Structures, Data Structures and Algorithms
  - Completed these courses about CS theory: Discrete Math, Foundations of Computer Science
  - Currently taking these courses about full stack and web development: Web Systems, Complete Web Development Bootcamp (App Brewery)
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## PROJECTS

### RELATIONAL DATABASE SHELL, C++

MAR 2024 – APR 2024

- Employed in-depth knowledge of data structures and C++ data management to design SQL-esque maintenance of a relational database that lives during runtime.
- Designed standard relational database-management operations such as CREATE, INSERT, DELETE, WHERE, JOIN, and index generation/deletion.

### DRONE DELIVERY GRAPH PROJECT, C++

APR 2024

Utilized graph algorithms to simulate a drone delivery optimization program that optimizes the distance between drone director beacons using both MST and TSP algorithms.

- Self-directed research to implement greedy minimum spanning tree algorithms, optimized branch and bound, and Traveling Salesperson heuristics like 2-OPT and random insertion.

### COMPROMISED PASSWORD CHECKER, PYTHON

JULY 2024

- Takes advantage of the Have I Been Pwned API to design a secure way to identify the frequency at which specific passwords, represented in an input file, have been compromised.
- Employs the k-anonymity model in order to securely identify which of the range of data requested from the API correspond to the locally-stored personal passwords, allowing the program to safely process the API data without giving any party your passwords.

### PIAZZA POST TOPIC CLASSIFIER, C++

DEC 2023

- Architected a machine learning classifier that takes piazza posts and their topic labels as training data and is able to reliably predict the topic labels of novel input.
  - Managed CSV input while maintaining design efficiency, using the advantages of efficient C++ data structures and related operations to process and store words to perform calculations on.
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## SKILLS

- **Programming Skills:** C++, Python, HTML, CSS, JavaScript, SQL
- **Frameworks:** Bootstrap, React, Flask
- **Programming Tools:** Visual Studio Code, Visual Studio, Git