

# David Shu

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## EDUCATION

### University of Michigan

Ann Arbor, MI

College of Literature Science and the Arts

- Bachelor's in Computer Science

Expected May 2026

Relevant coursework: Web Development, Software Engineering, Data Structures and Algorithms, Foundations of Computer Science, Computer Organization, Discrete Math, Game Design and Development, Data Science

## WORK EXPERIENCE

### MyEduTutor

May. 2024 - Present

#### Software Engineer Intern (React, Node.js, MongoDB)

- Spearheaded development of React-based crossword game feature, implementing LLM AI calls and integrating a Node.js backend with MongoDB for efficient data management.
- Utilized Agile methodologies and participated in daily stand-ups, sprint planning, and code reviews to enhance team productivity and code quality.

### Varsity Tutors

May. 2023 – Sep. 2023

#### ACT/SAT Math tutor

- Secured and managed clients, increasing scores by 20% on average by emphasizing conceptual understanding.

## PROJECTS

### Japanese Character Learner (Flask, REST API, Python, React, SQL, HTML, CSS, JS)

- Developed and deployed a web application for learning the Japanese alphabet by associating sounds with popular anime characters and phrases, receiving positive feedback from over 80 users.
- Built a backend using Flask and a REST API to fetch character data and responsive frontend using React, integrating an interactive chart. Decreased load time by over 90% by storing fetched data using json.
- Utilized SQL for efficient data management and retrieval, ensuring a seamless learning experience.

### Zombie Apocalypse Defense Game(C++, Priority Queues, Dynamic Polymorphism, Generic Code)

- Designed a robust simulation for defending a zombie invasion, utilizing priority queues, dynamic polymorphism, and generic code to optimize real-time combat scenarios.
- Incorporated advanced features such as a command-line interface with multiple flag options, real-time statistics display, and verbose and median outputs, boosting data insight by 50%

### 3-D Maze Puzzle Solver (C++, getopt\_long(), DFS, BFS)

- Implemented BFS and DFS algorithms to efficiently solve 3-dimensional mazes
- Decreased runtime by over 90% by reusing 3-D vector for different functions
- Integrated error handling and I/O redirection for user-friendly interaction and streamlined data processing.

### Banking Simulator

- Engineered a real-time banking wire transfer simulator with a focus on fraud detection, transaction integrity, and user-friendly command line interfaces using hash tables.
- Reduced transaction processing errors by 25% through robust fraud detection mechanisms.

### Zookeeper Route Finder

- Utilized Prim's, Kruskal's, and Branch and Bound techniques for optimal route finding and resource management by solving the minimum spanning tree and traveling salesman problems
- Implemented a 2-opt solution that increased speed by over 90%

### Computer Vision Image Resizing Application (C++, VSCode, Git)

- Developed an application that reduces image file sizes by up to 50% while maintaining visual content

### Euchre Game App (C++, VSCode, Git)

- Created a Euchre Game application using object-oriented programming simulating a game of Euchre
- Wrote dozens of unit tests in C++ ensuring functionality of inheritance, methods, game state, etc.

### Piazza Post Classifier (ML, NLP)

- Created a Natural Language Processing classifier for Piazza posts, employing binary search trees, recursion, and machine learning to accurately identify post subjects from a trained dataset.
- Improved classification accuracy by 20% by utilizing Bag of Words and Conditional Probability.

## Skills

- **Skills:** C++, Java, Python, React, JavaScript, HTML, CSS, GitHub, Git, XCode, Command Line, Assembly, SQL