

# MING CHENG

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## Skills

### PROGRAMMING LANGUAGE

C  
C++  
Python  
JavaScript  
HTML  
CSS  
Go  
Java  
SQL

### FRAMEWORKS

React.js  
Boost Asio  
OpenGL  
Design Patterns

### TOOLS

Git  
Firebase  
MongoDB  
Protocol Buffers  
AWS  
MySQL

### OS EXPERIENCE

FAT-based File System  
User-Level Thread Library  
Shell

## Education

University of California, San Diego  
Master of Science Computer Science 2021  
GPA: 4.0/4.0

Sept. 2019 to Current

University of California, Davis  
Bachelor of Science Computer Science and Engineering 2019  
GPA: 3.7/4.0

Sept. 2015 to June 2019

## Team Experience

### Gamification of Nutrition Literacy

Dr. Lisa M. Soederberg Miller's Team

University of California, Davis

Jan. 2019 to June 2019

- Worked in a team to develop a learning system with web-based games.
- Implemented two original games with various levels, login system for user interaction, leader board and badges rewards system in **JavaScript**, **HTML** and **CSS**.
- Implemented game physics, scene flow in **JavaScript** with **Phaser 3**, a framework for 2D games, designed game maps with **Tiled**.
- Used **Firebase**, a cloud-hosted NoSQL database to collect user data. LINK

### Client-Server for Warcraft II

Prof. Christopher Nitta's Multiplayer Team

University of California, Davis

Jan. 2019 to Mar. 2019

- Worked in a team to develop multiplayer support for Warcraft 2, a real-time strategy game (MOBA), on Linux, Mac OS and Windows.
- Implemented multiplayer system with Client-Server model in **C ++11** with **Boost Asio**, a cross-platform C++ library for network programming.
- Implemented login system with authentication, and message system for pre-game and in-game chatting.
- Used **Protocol Buffers** to serialize user and game data for efficiency.

## Projects

### Sorting Visualizer

Jan. 2020 to Feb. 2020

- Developed a web-based visualization tool for various sorting algorithms using **React.js**, **JavaScript**, **HTML**, and **CSS**.
- Applied Bubble Sort, Insertion Sort, Selection Sort, Cocktail Shaker Sort, Gnome Sort, Bitonic Sort, Shell Sort, Quick Sort, Merge Sort, Heap Sort, Radix Sort, and Bucket Sort for visualization.

### Path Finding Visualizer

Dec. 2019 to Jan. 2020

- Developed a web-based visualization application of path-finding algorithms using **React.js**, **JavaScript**, **HTML**, and **CSS**.
- Applied Dijkstra's Algorithm, A-Star Search Algorithm, Depth-First Search, Breadth-First Search, and Greedy Best-First Search for visualization.
- Applied maze-generation algorithms for visualization.

### Gomoku (Connect 5)

Feb. 2019 to Mar. 2019

- Developed Gomoku (Connect 5), an abstract strategy board game, using CC3200 launchpads and Adafruit SSD1351 as the display.
- Implemented multiplayer gameplay between two CC3200 launchpads using IR remote control.
- Used **AWS** and **REST API** to communicate game data between two boards such as POST and GET.

### 3D/2D Drawing System

Sept. 2018 to Dec. 2018

- Developed a system that can draw and transform lines, polygons and simple polyhedral in **C++** with **OpenGL**.
- Applied DDA and Bresenham line drawing algorithms to draw lines, the scan-line algorithm for rasterizing polygons, and the Cohen-Sutherland algorithm for two-dimensional clipping.
- Applied Phong lighting model, Gouraud shading and the Painter's algorithm to display colored 3D objects.