Ashley Chen

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EDUCATION

University of Southern California – Los Angeles, CA Jan. 2022 – May 2024
M.S. in Computer Science (GPA 3.74)
- **Coursework**: Analysis of Algorithms, Operating Systems, Computer Networks, Web Technologies, Database Systems, Web Search Engine, Mobile Devices and Game Consoles, Scientific Computing and Visualization

City of Hope, Irell and Manella Graduate School of Biological Sciences – Duarte, CA
Ph.D. Candidate in Biological Sciences
- **Coursework:** Mathematical Modeling

National Taiwan University – Taipei, Taiwan
B.S. in Clinical Laboratory Sciences and Medical Biotechnology (GPA 3.81)

PROJECTS

Multiprocessing
License Plate Recognition | Java, Git
- Implemented a multi-thread license plate recognition model in **Java.** The model was trained with actual license plate images from different states and utilized edge detection and 1NN approach to identify characters and digits on license plate images.
- Utilized performance profiler to identify the bottleneck of the multi-thread license plate recognition model and improved the model. The average runtime of the recognition process was reduced by **over 50 percent** after the improvement.

Web and Android App Development
Artist Search | Angular, Bootstrap, Python, JavaScript, TypeScript, HTML/CSS, Google Cloud Platform
- Created the responsive frontend web servers with a feature to search for detailed information about artists using **HTML/CSS/JavaScript** and **Angular/Bootstrap/TypeScript**.
- Created an Android app using **Android Studio** with features to search for artists and store users' favorite artists.
- Implemented backend server in **Python** handling user requests, database API responses, and JSON data parsing and transferring using **Node.js EXPRESS** framework.

Socket
Meeting Scheduling System | C++, TCP, UDP
- Designed the backend server which stores users' data and computes the time slots that work for all meeting participants once receiving requests from the client side in **C++.**
- Built the main server that gathers and distributes information from the client and the backend server.
- Built the client-side application that users can interact with and acquire the appropriate meeting time slots.
- Implemented **TCP** and **UDP sockets** for data transmitting between the client, the main server, and the backend server.

Game Development
A Journey of Ice and Fire | C#, Unity, Figma, Git
- Developed an innovative 2D platformer game in **Unity** and **C#** as a developer and product manager in a collaborative team. The game requires players to strategically switch between ice and fire characters to conquer the challenges successfully.
- Implemented character movement, camera tracing, collectible items, combat system, player health/damage system, player condition detection system, and various featured platforms.
- Developed game user interface, pixel art, and character movement animations in **Figma**.

Operating System
Weenix Kernel | C, Git
- Built a mini operating system and implemented process, thread creation, and scheduling for the Weenix kernel in **C**.
- Implemented the virtual file system calls for providing the interface between the Weenix kernel and the actual file system.
- Built a virtual memory management system using shadow objects, anonymous objects, page tables, and memory map for the Weenix kernel to run user programs in user space.

Machine Learning
Cat-Dog Differentiator | Keras, Python
- Utilized **Keras NN library** built on top of TensorFlow in **Python** to train the neural network to differentiate between pictures of cat and dog with 1000 cat pictures and 1000 dog pictures.
- Utilized the weights obtained from the trained neural network to classify cats' and dogs' pictures.

Mathematical Model
Heterogenous Breast Cancer Cells Interaction | Python
- Created a computational model that demonstrates the interaction between arginine phototrophic and auxotrophic breast cancer cells under an arginine-limited environment.
- Implemented the Lotka-Volterra model of competition in **Python** to simulate the cell growth curves of arginine phototrophic and auxotrophic breast cancer cells.

TECHNICAL SKILLS

- **Programming Language:** Java, Python, C/C++, C#, JavaScript, TypeScript
- **Database Tools:** SQL, NoSQL, Vertablo
- **Web Development:** HTML5, CSS, React, Angular, Bootstrap, Node.js, Flask
- **Tools/Platform/Framework:** Git, Linux, Docker, MPI, GCP, Unity, Figma, Android Studio