Zilin Xu

Email zx112@duke.edu · Github https://github.com/Bruce-XUZILIN

EDUCATION

Duke University	Class of 2024
Master of Engineering in Electrical and Computer Engineering(Software development track)	Durham, US
University of Miami	Class of 2022
Bachelor of Science in Computer Science	Miami, US

PERSONAL SKILLS

With **over 5 years** of coding experience and a background in **teaching code**, I have independently participated in enterprise-level **software development** as well as team-based **agile development**.In terms of career planning, my goal and knowledge base are primarily focused on B**ackend** development.

Technical skills and knowledge: **Java**(main), python, **Git,** database system, computer networking, operating system.

Other skills: Vlog editor, **hosting skill,** fluent English speaking, event manager skill, cross-team collaboration skill.

WORKING EXPERIENCE

Mevion Medical Systems	May - Aug 2023
Software Intern, R&D Department	Kunshan, China

Developed a software that displays **all 3D model files** of company machinery and implemented a **knowledge base Q&A system** based on company documents (**Python**).

- Implemented the loading and rendering of 3D models, displaying over **5000 STL files** in the GUI using **VTK renderer.** Provided **interactive features,** including model selection, hiding, resetting, and simulating mouse left, middle, and right-click events. Integrated **eight buttons** with corresponding functionalities in the software GUI, including **displaying PDF files** for specific models and **toggling Q&A mode**, significantly enhancing user interaction with the models.
- Integrated an open-source project from Tsinghua University for the **intelligent Q&A component** of the software. Established a **server** within the open-source project to retrieve answers, transmitting JSON files to the frontend GUI via **sockets**. Employed **multi-threading** to handle tasks related to obtaining model answers, ensuring **smooth operation** of the application.
- By incorporating a **startup progress bar** and operation instructions, the user-friendliness of the software's startup process was effectively enhanced. Additionally, the application of **multi-threading** and **network communication** not only boosted system performance but also ensured users were unimpeded when retrieving answers, resulting in a **smoother user experience**.
- This project received continuous **recognition** from the **company's CEO** and the R&D department, greatly optimizing the efficiency of training new employees. It also laid a solid foundation for the company's future knowledge graph collaboration with outsourcing companies.

PROJECT EXPERIENCE

Risc Game	**Java**	Apr - May 2023

- Designed an occupation-based game utilizing technologies such as **MVC (Model-View-Controller)** architecture, **Spring Boot**, and **Web Socket communication**. Established both **Client** and **Server** sides, enabling support for a minimum of **four players** to be online simultaneously.
- Implemented an online **chat room**, user registration, login, as well as features like **attacking and occupying territories**. In the game, players use soldiers to launch attacks on the territories of other players. It encompasses basic interactions such as soldier movement and upgrades, along with optional gameplay elements like upgrading technology, training spies, and forming alliances.

Battleship Game	**Java**	Feb 2023

- Created an end-to-end text-based battleship game project, where each player has a 10 x 20 grid to place over **10** battleships. The game features include ship selection, attacking, moving, sonar detection, and **human-computer interactions**.
- The project followed the S.O.L.I.D. design principle and used **object-oriented programming** features. The implementation utilized **20** Java classes, abstract classes, and interfaces. Each class was responsible for a specific functionality, ensuring program maintainability and extensibility.
- The project progress was globally planned, dividing all tasks into 8 goals, and tracked using **git** functionality. At each small task completion, **JUnit** framework was used for testing, achieving **100%** branch test coverage.

Implemented Malloc and Free	**C**	Jan - Feb 2023

- Implemented the C language library's malloc and free using two methods: **first fit** and **best fit**. The **sbrk()** function was used to allocate memory in the heap. Created a custom data structure to represent memory blocks, a **doubly linked list**, and maintained a **Freelist** representing all free blocks.
- To optimize memory allocation, a feature was implemented to **prevent memory wastage**. This involved **splitting** memory blocks from larger blocks and **merging** adjacent free memory blocks.
- To ensure **thread safety**, two methods were employed: **setting thread locks** and **defining thread-local static variables**.

TEACHING & LEADERSHIP EXPERIENCE

University of Miami Computer Science Department	Aug - Dec 2021
Teaching Assistant	Miami, US

- Became TA for Java Basics and Python Basics courses with over **200** students. Replied to an average of 5 emails every day for answering questions for courses and homework. Corrected the final projects of **all students**(over **100** lines code) and gave grades and reasons.
- Held lab hours for these courses **8 hours** per week. Explained the assessments and course materials in detail in order to help students get started as beginners. The overall student satisfaction exceeded **95%** .

Chinese Student Association	Apr - Dec 2021
Secretary of Culture & Entertainment Department	Miami, US

- Held online game competition for **all Chinese students** in order to enrich students' quarantine time.
- Acted as the chief director of the Mid-Autumn Evening party. Interviewed **20** programs. Selected best programs and rehearsed the lighting and venue over **10 hours.** Assign all my team members for over **8 tasks**(such lighting control) while the party started. The party attracted more than **200** students and won praise from all the parents.