Yueying Liu

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EDUCATION

University of Massachusetts Lowell (GPA: 3.8/4.0) *Lowell, MA, May 2022*

Degrees: Master of Science in Computer Science,
Bachelor of Science in Computer Science, Minor in Mathematics

Relevant courses: Machine Learning, Data Mining, Artificial Intelligence, Computer graphics, Computer architecture, Organization of programming languages, Assembly programming language, GUI, Foundation of Computer Science

SKILLS

- **Coding:** Python (Pandas, PyTorch, multiprocessing, TensorFlow, etc.), C/C++, HTML5, CSS, JavaScript, Bootstrap, R, Java, SQL, Node.js, React.js, Spark, etc.
- **Tools:** MS Office, MS SQL Server, MySQL, R Studio, AWS, Linux, Visual Studio, Neo4j, PyCharm, Java IDE, git, .NET, Jupiter, Unreal Engine 5, Blender, Github, etc.
- **Languages:** Chinese (Mandarin), English

WORK EXPERIENCE

Researcher Assistant *Mar 2021 – July 2023*

University of Massachusetts Lowell Department of Civil and Environmental Engineering

- **Data Management and Analysis:** Expertly **decoded and pre-processed** various datasets including Waymo's Automatic Driven Vehicle motion data, using **data mining techniques and Spark**. Crafted customized datasets for AI behavior classification and enhanced data pools with artificial data points using a **generative adversarial network (GAN)** in **TensorFlow**.
- **Web and Software Development:** Contributed to **the full-stack development of an internal data-driven website** using HTML5, CSS, **React.js**, **Node.js**, and **MySQL**, effectively showcasing enriched data pools and detailed research findings, enhancing data retrieval and analysis efficiency by **50%**.
- **Advanced Data Visualization:** Utilized data from processed datasets to **recreate and visualize traffic scenarios**, enabling accurate visual representation and assessment of original traffic conditions for analysis, increasing the efficiency of scenario checking by **100%**.
- **AI Development and Training:** Developed and differentiated AI-driven from human-driven vehicles using **machine learning techniques** and contributed to building a **Reinforcement Learning AI model** in **PyTorch**, setting up advanced training environments on **AWS** to support AI functionality.

PROJECT

Topdown Autoshooter Game Project *Dec 2023 - Present*

- **Core Game Development:** Contributed to the design and implementation of **fundamental game systems** using **C++** and **Unreal Engine 5**, enhancing player interactions and game mechanics. Developed a comprehensive inventory and equipment system to support extensive character customization and progression.
- **AI and Interaction Design:** Conceptualized and coded diverse enemy behaviors such as attack, chase, and dodge, enriching gameplay dynamics. Additionally, created **dynamic and intuitive interfaces** for effective player engagement and object manipulation within the game environment.
- **Performance Optimization:** Addressed major performance issues in rendering large numbers of AI characters by implementing **optimized algorithms** and **rendering techniques**, significantly improving frame rates and overall game fluidity.

Restaurant Management System Project *Sep 2023 – Dec 2023*

- **Core System Development:** Developed an offline-capable restaurant management system using **Node.js** and **Electron**, focusing on essential functionalities such as order management, and inventory tracking.
- **Interface and Usability Design:** Designed and implemented a user-friendly desktop interface that ensures operational efficiency and ease of use.
- **Data Management and Integrity:** Integrated **SQLite** for robust local data storage, enhancing system reliability and functionality without internet dependency.

Gomoku Game with Adjustable AI Difficulties *Mar 2022 – May 2022*

- **Game Development:** Implemented the base Gomoku game using the **Pygame** library, enabling both local multiplayer and a robust environment for AI integration.
- **AI Development:** Developed an AI for Gomoku that supports solo gameplay, employing the **Mini-Max algorithm** to simulate intelligent opponent behaviors.
- **AI Customization:** Introduced an AI difficulty adjustment feature, allowing players of various skill levels to enjoy the game by altering the tree search depth.