Zhi Zheng

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Education

Rensselaer Polytechnic Institute **Aug. 2020 – Dec. 2023**

GPA: 3.78/4.0 *Bachelor of Science in Computer Science & Games, Simulation Arts & Sciences* *Troy, NY*

Relevant Coursework

- Data Structures
- Discrete Math & Computing
- Algorithms
- Operating Systems
- Projects in ML & AI
- Advanced Game AI
- Computer Graphics
- Computer Architecture
- Differential Calculus
- Multi variable Calculus
- Game Development
- Software Design

Experience

Rensselaer Polytechnic Institute **August 2022 – Present**

Undergraduate Teaching Assistant for Algorithms *Troy, NY*

- Regularly held office hours for students, and studiously assisted with students in their homework and lab.
- Frequently graded student homework assignments and included well-received feedback for answers.
- Class topics include: Algorithm Analysis, Graph Theory, Graph Algorithms, Greedy Algorithms, Network Topology, Dynamic Programming, Flow Networks, and NP-Hard Problems.

Institute for Data Exploration and Applications (RPI IDEA) **June 2022 – August 2022**

Research Assistant *Troy, NY*

- Developed an emergent and dynamic Force Directed Graph with a geometric constraint.
- Worked with a multi-dimensional visual analytical hardware, *The Campfire*, in order to import unique datasets and simulate environments with the graph.
- Implemented an interactive visual display for nodes to select edge connections for the Force Directed Graph.

Projects

Procedural Terrain Generator Visualizer | *C++, OpenGL 3, ImGUI* **July 2022**

- Constructed a Procedural Terrain Generator through a graphics engine, where the user can visualize the world created from the generator after simulating the generation.
- The visualizer gives the user three different generation techniques, able to change subdivision in tessellation of the terrain, and able to update hyper parameters of the algorithm or noise for generation.
- Implemented Blinn-Phong lighting, model importer, mesh translator, skymap, and depth buffer in the engine.

Atari Breakout AI | *Python, Tensorflow* **July 2022**

- Developed a self Deep Learning AI that efficiently learns to play the game Breakout in an unsupervised setting.
- The AI will go through multiple iterations of the game, and through every new iteration it will play the game and learn from the results. Then, once it learns a strategy to win the game, it will learn an optimal strategy.

GaiNNs | *Java, JavaFX, Dyn4j, Open Source* **June 2022**

- Helped produce a simplistic Drag-and-Drop Environment and Character Builder, that can allow for users to create their custom simulations in the environment, and to train their agent in that environment.
- Integrated the JavaFX and Dyn4j systems in one system, established a playable and reversible timed environment, and implemented the physics engine with the system

Multi-Planet Bear Real Time Strategy Game | *C#, Unity* **April 2022**

- Created during *Ludum Dare 50* and nominated for **Technical Excellence** and **Impact** for *RPI's GameFest* 2022.
- Developed a game, where you have to select bears to gather materials in a planet, recruit more bears, and travel to another planet with your spaceship before the ice on your planet melts.
- Implemented shortest hexagonal tile pathing, camera panning to different planets, Bear recruitment, Bear movement logic, rocket movement, and advanced starting and ending screen with scores for total resources gathered.

Lego Brick Classification | *Python, Tensorflow* **September 2021**

- Trained a computer vision deep learning AI to classify & label each distinct *Lego* piece.
- Able to take an image of any specific *Lego* piece and match it with other images of *Lego* pieces.

Fundamental Skills

Programming Languages: LaTeX, C++, C#, C, Python, Java, MIPS, Javascript, Prolog
Developer Tools: VS Code, VS Community, Eclipse
Technologies/Frameworks: Git, Linux, JUnit, Unity, Godot, Unreal Engine, Helix Perforce, Microsoft Office Suite, Jupyter Notebook, Windows API, OpenGL 3, Django, PostgreSQL, MongoDB
Languages: English, Chinese (Mandarin)