NAHYE PARK
SOFTWARE ENGINEER

Employment

Cognitiv — Bellevue, WA
Software Engineer I — Aug. 2020 to June 2021, Aug. 2020 to June 2021
- Responsible for managing and maintaining the server for bidding advertising and facilitating communication with the prediction server.
- Successfully implemented features enabling communication between the prediction system and Consul, resulting in improved effectiveness and ease of managing model workers.
- Utilized parallel programming and network to enable efficient request/response handling for machine learning results.

DigiPen Institute of Technology — Redmond, WA
TA — Jan. 2020 to Apr. 2020, Jan. 2020 to Apr. 2020
- Assisted in facilitating student comprehension of Probability and Statistics coursework.
- Evaluated and graded programming assignments submitted by students.

Projects

3D Physics Engine using Sequential Impulses — Jan. 2023 to Apr. 2023
- C++, OpneGL, custom engine.
- Implemented a dynamic AABB tree for broad-phase collision detection to optimize the collision detection process so that it works with over 1,000 objects.
- Implemented Separating Axis Theorem(SAT) for narrow-phase collision detection to check the collision detection between polygon-shaped objects.
- Implemented Sequential Impulses for collision resolution using an accumulated normal impulse.
- Added UI features, including drawing colliders, velocities, and tree nodes and manipulating the objects, using ImGui to control the scene and debug.

HoneyDoom (3D rolling ball game) — Sept. 2022 to Apr. 2023
- C++, custom engine.
- Developed a physics engine's rigid body system for use in game development.
- Implemented a spring system to facilitate the creation of cloth models.
- Designed and implemented a physics space that applies forces to integrate objects, detects collisions, and resolves them.
- Developed collision resolution capabilities in the engine to support physics-based object movement and animation.
- Implemented a camera system using ray casting to automatically reposition itself in front of objects if the player is obstructed from view.
- Contributed to gameplay development, including combat mechanics between the player and enemies, implementing color interpolation based on player health, and creating basic enemy behavior that allows them to pursue the player.
- Implemented the ocean wave algorithm for lava under the floor.

Vehicle Detection using Support Vector Machine — Sept. 2021 to Dec. 2021
- python, Jupyter Notebook
- Implemented Support Vector Machine(SVM) classifier for vehicle detection using the sklearn library.
- Extracted the feature from images using the Histogram of Oriented Gradient(HOG) to detect the shape of the object in the images.
- Achieved a 96.85% accruacy and 3.1% false positive rate in the SVM classifier by training on 14,208 samples and testing on 3,552 samples.

3D Soft Body & Physically Based Rendering Demo — Sept. 2019 to Dec. 2019
- C++, custom engine.
- Built a custom physics engine using C++ to handle both soft body and rigid body physics.
- Implemented 3D soft body physics using the spring-mass method for plane and sphere objects.
- Developed collision detection and response mechanisms for interactions between soft-body objects as well as between rigid-body and soft-body objects.

Contact

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NahyePark

Education

DigiPen Institute of Technology Sept. 2021 to Apr. 2023
M.S. Physically-Based Simulation 2023
GPA 3.9

DigiPen Institute of Technology
B.S. Real-Time Interactive Simulation 2020
GPA 3.7

Skills

SKILLS
Physics Engine
Data Structure
Linear Algebra
Algorithms
Graphics
Statistics
Game AI
Data Science
Parallel Programming
Machine Learning
3D Animation
Image Processing

TOOLS/API
Windows
Linux
Visual Studio
Git
SVN
OpenGL
Unity
AWS
Consul
Terraform
Jupyter Notebook

COMPUTER LANGUAGES
C++
C
C#
Python

LANGUAGES
Korean
English