Mark Turpen

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OBJECTIVE

Seeking an internship in the field of Computer Engineering for the summer of 2022

EDUCATION

Texas A&M University, College Station, Texas
Pursuing a Bachelor of Science in Computer Engineering and a Minor in Mathematics
Expecting to graduate in December of 2022
Current GPR: 2.6

PROJECTS

Visual demonstrations and code for all the following projects can be found on my website: http://markjturpen.blogspot.com/ or my GitHub: https://github.com/stoned-ape.

Machine Learning

- Programmed a three-layer feed-forward Neural Network that can recognize images of hand-written digits with 91% accuracy along with a web app that predicts digits that you draw.
- Employed a genetic algorithm to train a population of neural networks to play the mobile game Flappy Bird better than a human.

Computer Graphics

- Implemented a graphics engine that uses the Ray Marching algorithm to render images with realistic shadows, reflections, refractions, and diffusion (prisms).
- Modified the Ray Tracing algorithm to render how light is bent in a gravitational field around a black hole.
- Programmed a web app that allows you to plot arbitrary 3D surfaces.

In-Browser Games

- Developed a Minecraft-like video game that allows you to place and destroy blocks to build structures in a three-dimensional procedurally generated world.
- Developed a Rubik's cube simulator that you can attempt to solve by rotating the cube in space and using keyboard commands.

Physics Simulations

- Created a visualization of electro-magnetic waves that simulates wave reflection, refraction, and diffraction as demonstrated in the famous double-slit experiment.
- Implemented a rigid-body physics simulation that handles collisions between 3D objects in a way that conserves energy and momentum.

Low-Level Programming

- Created a compiler that converts C code into x86 assembly language.

EXPERIENCE

AGGIENOVA at the Mitchel Physics Institute August 2017 – December 2017
Undergraduate Researcher (uncredited)

- Organized, analyzed and made visualizations of spectrum data taken from Type 1A supernovae, with Python