EMILY XIAOHUA ZHANG

3rd Year CMU Computer Science Student

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EDUCATION

Carnegie Mellon University
B.S. Computer Science — GPA: 3.6 — Class of 2023

- Concentration in Computer Systems, Concentration in Machine Learning
- Relevant Coursework: 15213: Computer Systems | 15330: Computer Security | 15150: Functional Programming | 15251: Theoretical Computer Science | 21259: 3D Calc | 15281: Artificial Intelligence | 21241: Linear Algebra | 15210: Parallel and Sequential Data Structures | 36218: Probability | 99358: Unity Game Development

WORK EXPERIENCE

Research Assistant
Edge Computing @ CMU Living Edge Lab — Pittsburgh, PA — May 2021 – Present

- Tested the capabilities of training object detection models on synthetically-generated image data.
- Conducted experiments modifying lighting, colors, positioning, and other parameters to observe effects on the models.
- Created an assembly assistant using models trained on synthetic data.
- Documented detailed steps to replicate experiments and periodically presented findings to lab professor.
- Learned or practiced using Tensorflow, docker, command-line, Python, Blender, Solidworks, Unity, and git.

Virtual Reality Developer
Biomotivate — Pittsburgh, PA — April 2020 - August 2020

- Used Unity 3D to develop a VR meditation app for decreasing cravings and relapses in drug addiction patients.
- Set up VR video playing, designed and implemented menus, and developed more accessible navigation/control features.
- Conducted problem research, product brainstorming, design, and development while collaborating with my team.

Research Lab Intern
Children's Hospital of Los Angeles — Los Angeles, CA — June 2018 - July 2018

- Conducted research about the colonization of enterococcus faecalis in neonatal rats.
- Utilized technical skills such as operating equipment, plating mediums, and identifying significant data.
- Conducted experiments cultivating bacteria and analyzing growth data. Presented findings to the lab group of 6 people.
- Abstract was accepted by the 2019 Academic Surgical Conference.

PROJECTS

CS:APP3e Programming Labs
Spring 2021

- Worked through Computer Systems: A Programmer's Perspective labs for the 15213 computer systems course.
- Used C to implement dynamic memory allocation using implicit and explicit segregated linked lists, free-block coalescing, and other techniques to maximize utilization and throughput.
- Implemented a cache simulator that records cache hits, misses, evictions, and dirty bytes given a trace file. Created data structures to represent cache sets, lines, and blocks. Used LRU eviction policy for maintaining temporal locality and middle-bit indexing for spatial locality.
- Implemented a proxy using multithreading to process requests concurrently and a doubly-linked list cache to increase efficiency. Used mutexes and semaphores for synchronization and preventing race conditions in the cache.
- Other projects include: bit manipulation and float conversion exercises, learning assembly, implementing shell program

GCS Rogue-Like Video Game: Escape from Lab 8
Winter 2020

- Integrated new features and gameplay to existing prototype using Unity.
- Programmed monster movement and actions, map generation, item generation and interactions.

- Worked with team of 12 programmers, artists, designers, and musicians.

ScottyLabs: Lost and Found Website

Winter 2020

- Used React to implement grid of cards with information on lost items.

Esoteric Programming Language: Turnip

Winter 2020

- Ideated a psychologically infuriating esoteric language named 'Turnip', riddled with opposites and anagrams but in an intentionally inconsistent way.
- Created a sample program for solving FizzBuzz.

GCS StuCo: Comfy Knitting Game

Fall 2020

- Lead programmer for a knitting game built in Unity. Worked with two others over the course of 3 weeks.
- Wrote script to generate game board tiles based on pixels from an image.
- Implemented gameplay, keyboard controls, high score, UI sounds, game settings, menus, and other quality-of-life details.
- Designed and implemented UI for home page, level select, and game screen.

Shady Side Academy Computer Science Department Website

Fall 2019

- Independently built website homepage for high school computer science department.
- Planned page layout using Figma and implemented layout using HTML, CSS, and Javascript.
- Project was inspired by the very-evident need of an update for the current website.

Club Matching App (HackCMU)

Fall 2019

- Created app that compiles club data from CMU Bridge website and connects the user with matched student organizations
- Implemented survey with dropdown menus and ics calendar file upload capabilities.
- Worked with backend members to assign clubs based on various preferences and interests.
- Team of four quickly learned basics of Android Studio from scratch, dividing roles for maximum efficiency.

SKILLS

Programming Languages: C, C#, Java, Python, Standard ML, HTML/CSS

Tools: Tensorflow, Unity, Git/Github, Docker, Linux, Tmux, Android Studio, Blender, Photoshop, Arduino, GDB, pdb, React

Areas of Knowledge: Computer Systems, Machine Learning, Game Development, Web Development, Mobile Development