Yufei Shi

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Education

Carnegie Mellon University　　　　　　　　　　　　　　　　　　　　**Pittsburgh, PA**
Bachelor of Science in Electrical and Computer Engineering　　　　　　　　Expected May 2024

Relevant Courses

- Fundamentals of Programming and Computer Science
- Principles of Imperative Computation
- Mathematical Foundations of Electrical Engineering
- Introduction to Computer Systems
- Introduction to Machine Learning∗
- Computer Graphics∗

∗ Spring 2022

Experience

Carnegie Mellon University　　　　　　　　　　　　　　　　　　　　**Pittsburgh, PA**
Teaching Assistant for 18-213/613 Introduction to Computer Systems　　　January 2022 – Present
- Lead two small group sessions and build an interactive learning environment for small group students.
- Help students review and preview course contents and assist them in doing labs.
- Host office hours and answer questions on the course forum.

The High School Affiliated to Renmin University of China　　　　　　**Beijing, China**
Innovative Student Researcher, Team Leader　　　　　　　　　　　September 2018 – May 2019
- Designed and implemented an application that could help people having trouble using mouse or trackpad to interact with computing devices in an easier way with two other students and served as the team leader.
- Combined a neural network (trained using Keras and a public dataset) and cascade classifiers to detect and track the coordinates and relative movements of the users' eyes and irises.

Institute of Computational Technology, Chinese Academy of Sciences　　**Beijing, China**
Summer Apprenticeship　　　　　　　　　　　　　　　　　　　　　　August 2017
- Learned and implemented classical encryption methods, experimented with mixing several encryption methods together and explored the time complexity of using brute force to crack the mixed encryption algorithm.
- Explored possible ways that a buffer overflow could lead to exploitable vulnerabilities in a specific Linux distribution.

Projects

C0 Virtual Machine (15-122 Lab) | C, Valgrind　　　　　　　　　　　**Summer 2021**
- Implemented a functional virtual machine with 49 instructions for the C0 programming language using C.
- Utilized Valgrind to detect, analyze and minimize memory leak.

Note Dance! (15-112 Term Project) | Python, Pygame, Model-View-Controller Pattern　**Fall 2020**
- Developed a music game as the Term Project of CMU 15-112 Fundamentals of Programming and Computer Science.
- The game is written in Python and implemented based on the MVC design pattern and cmu_112_graphics framework.
- Implemented features including automatic musical keys generation based on audio wave analysis.
- Designed a user-friendly interface for players to create their own musical key combinations.

Skills

Programming Languages: C, C++, Python, JavaScript
Developer Tools: Anaconda, VS Code, Vim, Valgrind, GDB, Git, Google Colab
Technologies/Frameworks: Linux, MATLAB, SOLIDWORKS, Arduino, Keras, Matplotlib, Pygame, LaTeX
Spoken Languages: English (fluent), Chinese (native)

Leadership / Extracurricular

Chinese Student and Scholar Association at Carnegie Mellon University　　**Pittsburgh, PA**
Director of the Department of Design and Technology　　　　　　　　　　Fall 2021 – Present

Student Union, The High School Affiliated to Renmin University of China　**Beijing, China**
Director of the Department of Publicity and Design　　　　　　　　　Fall 2018 – Spring 2020

Honors

Dean's List | Carnegie Institute of Technology, Carnegie Mellon University　**Fall 2020, Spring 2021**
Excellent Research First Prize | The High School Affiliated to Renmin University of China　**May 2019**
National Semi-finalist | China Thinks Big Research and Innovation Competition　**May 2018**