

Helen Huang

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EDUCATION

Brown University, Sc.B in Computer Science, 3.92/4.00 GPA

Providence, RI | **Expected Graduation May 2024**

Relevant Courses: Deep Learning, Machine Learning, Computer Vision, Advanced Computer Graphics, Operating Systems, User Interface and Experience, Linear Algebra, Discrete Structures and Probability

Current Courses: Computer Networks, Computational Linguistics, Computational Photography

TECHNICAL SKILLS

Languages: C, C++, Python, Swift, Go, Java, Javascript, HTML/CSS, SQL

Tools: PyTorch, Tensorflow, React, Next.js, MongoDB, OpenGL, Metal, SwiftUI

EXPERIENCE

Computer Graphics TA, *Brown University*

June 2023 – Present

- Helped write the projects and labs for Brown's Computer Graphics course during the summer
- Holding weekly office hours and grading student assignments during the fall

Project Manager Intern, *Cocobolo Group*

June 2023 – August 2023

- Led a team of 6 in designing, developing, and QA testing an iOS app and website for servers and customers at restaurants
- Held daily standups with engineers to discuss high-level software decisions in Swift and Firebase and prioritize tasks using Jira
- Hired a QA tester and web developer to improve app stability and website development efficiency

Research Assistant, *Brown University Interactive 3D Vision & Learning Lab*

June 2022 – December 2023

- Won a summer research grant to research neural radiance fields for photorealistic novel view synthesis under Prof. Sridhar
- Tested scene data from our synthetic capture stage on various NeRF models to ensure quality of data for long scene modeling and hand-object interaction

PROJECTS

ChatAI Website, *Personal Project*

June 2023 - Present

- Designed and implemented a website that allows users to chat with AI-generated celebrities and famous characters
- Used React, Next.js 13, and Tailwind CSS to implement the website in Javascript. Used ChatGPT's Chat Completions API and MongoDB to dynamically generate realistic chat responses and store celebrity profiles

Physics-based Simulator and Renderer, *Computer Graphics course*

January 2023 – May 2023

- Implemented a pathtracer that supports diffuse, glossy, mirror, and refraction BRDF materials with anti-aliasing techniques like stratified sampling and importance sampling in C++
- Implemented a real-time, physics-based mesh deformer using the Finite Element Method in C++ and OpenGL
- Implemented a physics-based ink-in-water simulation to render realistic videos of ink drops diffusing in water using C++. Later optimized performance to be in real-time by reimplementing it in Swift and Metal

Signature Forgery Detector, *Deep Learning course*

September 2022 - December 2022

- Interpreted the performance of a CNN, Vision Transformer, Siamese CNN, and Siamese Vision Transformer using LIME to analyze and interpret how each model learned to classify the signatures
- Used this information to develop our final signature forgery detector with 86% precision and 93% recall using a Siamese CNN in Python and PyTorch

Cat Ninja iOS Game, *Personal Project*

June 2022 - August 2022

- Designed and developed an iOS cat ninja game in Swift using the SwiftUI and SpriteKit frameworks

Computer Systems Projects, *Computer Systems course*

April 2021 – May 2022

- Implemented a Venmo-like banking service in C++ where users may withdraw, deposit, and check their balance as well as pay and charge other clients. Used synchronized data structures and multithreading to ensure fast and secure transactions
- Implemented a Facebook-like distributed system in C++ to handle server and client connections using RPCs and sharding

Computer Vision Projects, *Computer Vision course*

April 2021 – May 2022

- Implemented a convolutional neural network for image classification in Python using Tensorflow
- Produced a 3D voxel model of the Computer Vision professor in Python for my final project using photogrammetry techniques on self-captured images and camera poses

Recommender Program, *Software Engineering course*

September 2021 – October 2021

- Developed a group-recommender system in Java and SQL to match students with classmates based on skill sets and interests
- Implemented KDTrees and Bloom Filters to organize numeric and categorical data loaded from APIs and databases to find the shortest distance between nodes

Iron Man Helmet, *Design Engineering course*

March 2021 – April 2021

- Led a group of 4 people to design and create a voice-activated Iron Man helmet using a Raspberry Pi for our final project
- Researched, designed, and engineered the mechanism that opens and closes the mask using servos, prototyping materials like cardboard, and laser cutters