Ben Neuwirth

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Education

Cornell University Ithaca, NY

Bachelor of Arts in Computer Science, GPA: 4.19 / 4.3, Rawlings Scholar, Dean's List *Aug. 2021 – Dec. 2024*

- Relevant Coursework: Object-Oriented Programming & Data Structures, Computer Architecture, Operating Systems, Computer Graphics, Computer Game Architecture, Analysis of Algorithms

Work Experience

SteamVR Software Engineer (Contract) May 2023 – Aug. 2023

Valve Corporation *Bellevue, WA*

- Developed a novel, easy-to-use full-body tracking system for SteamVR headsets using C++ and OpenVR
- Trained machine learning model using PyTorch to estimate body and leg position using camera and depth
- Surveyed the state of existing systems for body tracking and integrated them into SteamVR

Undergraduate Researcher Jan. 2022 – May 2023, Aug. 2023 – Present

Program of Computer Graphics, Cornell University *Ithaca, NY*

- Researched intersection of eye tracking, virtual reality rendering, and color perception for data compression
- Designed algorithm to successfully compress VR frames while maintaining perceived visual quality
- Created VR color perception experiments using Unreal Engine and Tobii Stream Engine API for eye tracking

Projects

Bubblegum Bandit | *Java, LibGDX, Box2D, Git* Jan. 2023 – May 2023

- Developed an action-platformer video game for Cornell's game design class using Java framework LibGDX
- Collaborated with team of eight programmers, artists, and musicians
- Implemented level editor integration by parsing JSON from Tiled level editor into simulated game world
- Programmed dynamic game camera, bubblegum and enemy mechanics, and many other features
- Published game on Steam game store with over 200 unique players and increasing

OCaml Chess | *OCaml, Python, Git* Mar. 2023 – May 2023

- Implemented the game of chess using functional programming in OCaml with a group of four
- Included detailed rules such as castling, pawn promotion, and check and checkmate detection
- Created Python script converting actual chess games in Portable Game Notation to inputs to our program, testing our correctness while allowing players to try unique positions and puzzles

OpenGL Minecraft Clone | *C++, OpenGL, CMake* Aug. 2022 – Sep. 2022

- Developed C++ application using OpenGL to render a simple world of 3D cubes with camera control
- Implemented Phong lighting model and point and directional lights for basic shading
- Used Perlin noise to procedurally generate random game world to explore

Pulse | *Swift, UIKit, Heroku, Git* Nov. 2021 – Dec. 2021

- Worked in group of 5 to create iOS app using Swift, creating playlists aggregating users' listening history
- Connected to Spotify API through authentication flow and fetched listening history and genres
- Interfaced with Heroku REST API to store and retrieve user data and generate shared playlists

Other Experience

Course Teaching Assistant Aug. 2023 – Present

CS 1620: Visual Imaging in the Electronic Age, Cornell University *Ithaca, NY*

- Lead small-group discussion sections focused on color science and virtual reality applications
- Hold weekly office hours to provide individualized assistance and grade a diverse range of student assignments

Course Consultant Jan. 2023 – May 2023

CS 2110: Object-Oriented Programming & Data Structures, Cornell University *Ithaca, NY*

- Worked as a course assistant for core computer science class of over 600 students
- Held weekly office hours for one-on-one help and graded hundreds of projects and exams
- Assisted with weekly recitations to review and teach new data structure concepts in Java

Skills

Languages: C, C++, Java, Python, C#, JavaScript, HTML, CSS, Swift, OCaml, Verilog
Developer Tools and Frameworks: Git, Linux, CMake, OpenGL, SDL, Unreal Engine, Unity, PyTorch, OpenVR