

# Benjamin Martinez

(407)-779-9428 | benjm@stanford.edu

---

## EDUCATION

### Stanford University

Stanford, CA

*Bachelor of Science in Computer Science*

2020-2024

GPA: 3.6

CS Coursework: CS 107E (Computer Systems), CS 44N (Great Ideas in Graphics), CS 161 (Algorithms), CS 231N (Deep Learning For Computer Vision), EE 267 (Virtual Reality), MATH 104 (Matrix Theory), CS 111 (Operating Systems), CS 248B (Computer Graphics: Animation and Simulation), PSYC 221 (ML in Neuroimaging), CS 221 (AI Principles), CS 205L (Lin Alg & Optimization), CS 248A (Computer Graphics: Rendering, Geometry, and Image Manipulation), CS 229 (Machine Learning), CS 348N (Neural Models for 3D Geometry - audited)

Will take this year: CS 224N (NLP), CS 149 (Parallel Computing), CS 348B (Computer Graphics: Image Synthesis Techniques), CS 234 (Reinforcement Learning), CS 348E (Character Animation and Simulation)

---

## EXPERIENCE

### Stanford Vision and Learning Lab

Stanford, CA

*Research Assistant*

April 2023 - PRESENT

- Handle collision mesh processing in **Python** and **3ds Max** for BEHAVIOR-1K, a simulation benchmark for embodied AI (<https://behavior.stanford.edu/>)

### Meta University - Meta

Menlo Park, CA

*Software Engineering Intern*

Summer 2022

- Learn Full Stack web development with **React** and **NodeJS** to develop a social collaboration web app.

### Stanford Virtual Human Interaction Lab - VHIL

Stanford, CA

*Programmer*

September 2021-June 2022

- Create virtual worlds using **Unity**, **Blender**, and **C#** for VR experiences to be used in research to understand the dynamics of interactions among people in immersive VR simulations
- 

## CLUBS & ORGANIZATIONS

### Stanford BCI (Brain Computer Interfaces) Club – Project Team

Stanford, CA

*Member*

January 2023-PRESENT

- Collaborate with 4 other members to build a BCI for measuring attention using biometrics and machine learning then using this feedback to control video playback

### Stanford Space Initiative Mars Simulation Team

Stanford, CA

*Co-Lead*

September 2020-January 2022

- Manage future direction of project, delegate tasks, organize weekly meetings for our team of 10
  - Research Mars' mission plans, contribute to **Python** codebase to simulate missions with variable scenarios
- 

## PROJECTS

### Convex Optimization for Computer Vision Data Selection

- Our team designed a novel method for optimized data selection using convex optimization
- Built and experimented with deep learning CNN models in **Tensorflow** to diagnose chest X-ray images

### Meta-Learning & Meta-Loss

- Self-directed research project for CS229 with **Pytorch** to analyze and improve state-of-the-art meta-learning model weight initialization procedures.
- Co-developed a novel method to optimize training by shaping loss curves

### **Predicting ASD from fMRIS**

- Self-directed research project for PSYC221 to use machine learning with **Pytorch** to predict autism from functional connectivity patterns in time series fMRI data

### **Gameboy Emulator**

- Bare metal programmed a Raspberry Pi to emulate the original Gameboy
- Used **C** to build a graphics library, allocate memory, and process CPU instructions from the ground up

### **Volcano Music Visualizer**

- Designed a visualizer that transforms audio input or computer-generated music into a reactive volcano
- Created visuals and wrote scripts in **Unity** and **C#** and generated music using **ChuckK** programming language

### **VR Wheelchair Simulator**

- Developed with **Unity** Interaction Toolkit to track Oculus Quest movement data to simulate a physics-based, first-person perspective of moving in a wheelchair

### **Educ8 – Stanford TreeHacks Hackathon**

- Collaborated with team to create an EdTech platform connecting online learners to form custom courses
- Implemented and designed the front-end using **React** and Material-UI

### **SVG Renderer**

- Implemented a software rasterizer that draws SVG format images in **C++**

### **Ray Tracer**

- Implemented ray-scene geometry queries, materials, and path tracing for global illumination in **C++**.

---

### **SKILLS**

- Proficient in Python, C, C++, C#, React, NodeJS, PyTorch, Unity, Git, Blender, Unix, 3ds Max, JavaScript