Marco Yang

510-738-8001 • myang2@caltech.edu • linkedin/marco-yang-17189a203 • github/mcrco • marcoya.ng

Passionate and fast-learning CS student at Caltech. Previous work: Computer vision research with generative diffusion models and video action recognition in the Caltech Vision Lab, software development for educational video game platform.

EDUCATION

California Institute of Technology *Pasadena, CA* Expected 2026

Computer Science GPA: 3.91

SKILLS

Languages C, C++, Java, Python, Javascript, Typescript, MATLAB, Mathematica

Frameworks React, Meteor.js, Node.js, MongoDB, Dropwizard, Pytorch, Tensorflow, Selenium, Flask, Langchain, Pinecone

Misc. Linux, Shell scripting, Git, Web scraping, Computer Vision, Generative Diffusion Models, Full-stack, LLM, RAG, AWS

EXPERIENCE

ML Researcher | *Caltech Vision Lab - Dr. Pietro Perona, Dr. Markus Marks, Neehar Kondapaneni* Mar 2024 - Present

- Novel approach to cross-domain video action recognition utilizing generative diffusion models
- Injected into CompVis' Stable Diffusion 1.5 and Hugging Face implementation of Modelscope (text-to-video model)
- Implemented multiple classification heads (MLP, 3D CNN, Transformer) for action classification on diffusion features
- Used PyTorch, WandB, Huggingface

Full Stack Software Developer Intern | *Fathomd* Aug 2021 - Jun 2023

- Developed educational video games for business schools like MIT Sloan, with a focus on the instructor dashboard.
- Performed full-stack development, including creating React components, adding routes for new pages in the frontend using Meteor (Ironrouter), developing REST API endpoints, and modifying DTO/DAO layers in a Dropwizard Java backend.
- Migrated the instructor dashboard from BlazeJS to React and implemented a "classes" feature, enabling instructors to manage tailored game sessions for different classes.
- Collaborated with a team using tools like Jira and GitLab, gaining experience in agile software development workflows.

PROJECTS

Caltech Course LLM Agent | **github** | **link**

- LLM with retrieval-augmented generation (scraped course catalog/reviews) that answers Caltech course questions
- Built with Python, Flask, Langchain/Langgraph, OpenAI API, Deepseek API, Vite, Typescript, React, Shadcn

Caltech Course Graph | **github** | **link**

- Interactive graph visualization and prerequite finder for Caltech courses
- Built with Vite, Typescript, React, Zustand, Shadcn, Tailwind CSS

Tennis Ranker | **github** | **link**

- Production web app that tracks tennis match scores and automatically rank players
- Features: user accounts, multiple tournaments/sessions, automatic leaderboards and skill comparison using BFS
- Built with Meteor, MongoDB, React, Typescript, Tailwind CSS; deployed on Linux server with DigitalOcean + AWS SES

RELEVANT COURSEWORK

CS 2 (Data Structures), CS 3 (Programming in C), CS 155 and 156 (Machine Learning), CS 24 (Computing Systems), ACM 104 (Applied Linear Algebra), CS 38 (Algorithms), CS 172 (Distributed Computing), CS 148: (Large Language and Vision Models)

HONORS & ACCOLADES

William Lowell Putnam Mathematical Competition | *Top 1000* December 2023

- Score of 19 (top 1000) in largest North American intercollegiate math competition

USA Computing Olympiad | *Gold Division* February 2021

- Gold Division in high school programming competition (theoretical CS, data structures and algorithms)

American Math Competition/American Invitational Math Exam | *AIME Qualifier* November 2021

- Qualified for American Invitational Math Exam 3 times (top 2.5% of all participants, top 0.1% of pre-college students).
- Highest score of 6 on the AIME (top 1% of participants, top 0.05% of pre-college students)