# Yishu (Pearl) Chen

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## EDUCATION

**California Institute of Technology** — Pasadena, CA
B.S. Computer Science (Machine Learning Track), Math, 4.0/4.0 GPA — 2020–June 2024

## PROJECTS - CLAMOODLE.GITHUB.IO

- **Set World : The Online Game** (Chrome Preferred) — Jun 2023 - Now
  - Independently developed an original online game, taking charge of full-stack development, with dynamic obstacle generation and customizable user avatars. Successfully deployed the game on Microsoft Azure.
  - Implemented features including friend requests, real-time messaging and score-tracking.
  - Enhanced app security by building defense mechanisms against common attacks such as session attacks, cross-site scripting, and code injection
  - Designed and hand-drew all sprites and animation, wrote and produced all in-game soundtracks.
  - **Tech stack: Azure Web App, ES6 Javascript, SQL, REST API, Node.js, Socket.io**
- **Average Faces (of Caltech)** — May 2023
  - Employed Node.js and Puppeteer to crawl and scrape over 10,000 lines of data from Caltech's student directory website, spanning over 6 class years of students' data.
  - Developed a robust computer vision algorithm in Python, integrating Mediapipe facial landmark detection and OpenCV2, enabling the computation of average faces for various subsections of Caltech (e.g., by major, house affiliation, etc.).
  - Created an interactive website with REST API support, enabling users to explore and visualize the results.
  - **Tech stack: Mediapipe, OpenCV2, Node.js, Puppeteer, REST API**

## SKILLS

- **Relevant Coursework:** Data Structures (A), Machine Learning and Data Mining (A+), Software Design in C (B+), Web Development (A+), Web Security, Computing Systems (enrolled), Networks (enrolled)
- **Languages:** ES6 Javascript, HTML5, CSS3, Python (Pytorch, Pandas, Numpy, Matplotlib), Java, C, MATLAB
- **Spoken Languages:** English (Native), Chinese (Native)
- **Random skills:** Design, illustration, painting, snowboarding, karate, video editing, directing, accordion

## EXPERIENCES

- **Undergraduate Teaching Assistant** *California Institute of Technology* — Fall 2022&23
  - Demonstrated excellence as a Teaching Assistant for Caltech's renowned introductory course on probability models, ACM 116, earning a 5/5 rating for overall teaching effectiveness.
  - Graded homework sets and exams, promptly addressed students' questions, and diligently conducted weekly office hours to provide support and guidance.
- **Summer Undergraduate Researcher (SURF)** *Caltech, Tsinghua University* — 2022
  - Conducted original research in machine learning under the mentorship of Dr. Yanan Sui.
  - Worked on designing and improving an Android-compatible deep learning model for human pose recognition in videos to aid in diagnosing patients with Parkinson's Disease, achieving a notable accuracy of 94%.
- **Summer Undergraduate Researcher (SURF)** *California Institute of Technology* — 2021
  - Original research in mathematics (algebraic topology) under the mentorship of Dr. Lei Chen.
  - Pioneered a novel proof structure, extending previously established results from 1-dimensional to any $n \in \mathbb{N}$.

## HONORS AND ACTIVITIES

- **Caltech Math Club** — 2020-Present
- **Invited to and attended Canada Math Camp** — 2018
  - Invitation-only annual national math summer camp selecting 25 Canadian students nationwide in grades 8 to 10 with the potential to compete at the mathematical olympiad level.
- **Caltech Jane Street Estimathon** - 2nd Place Overall — 2022
- **Virtualitics Data Hackathon** - 2nd Place, Team Captain — 2021
- **Selected for Exhibition at the Toronto Twist Gallery** - Among 15 from over 2000 students — 2019
- **Toronto Regional Debate Tournament: Voice of Change** - Champion — 2017