Yishu (Pearl) Chen

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Education

California Institute of Technology — Pasadena, CA
B.S. Computer Science, Math, 4.0/4.0 GPA — 2020–June 2024

Relevant Coursework

- **Pure Mathematics**
  Abstract Algebra, (Multivariable) Calculus on Manifolds, Classical Analysis, Geometry and Topology, Intro to Discrete Mathematics, Decidability and Tractability
- **Applied Mathematics**
  Linear Algebra, Probability Models, Differential Equations, Statistical Inference
- **Computer Science**
  Intro to Programming in Python, Data Structures in Java, Machine Learning and Data Mining, Software Design in C, Web Development Introduction to Computing Systems in C (enrolled), Networks: Structure Economics (enrolled)
- **Others**
  Intro to Finance, Algorithmic Economics

Experiences and Projects

- **Average Faces (of Caltech)** 2023
  - Used a data scraper that pulls data from Caltech's directory website
  - Made an ML algorithm with Mediapipe and OpenCV2 to compute the average face of whichever subsection of Caltech (major, house affiliation, etc) and making this into a website
  - Hoping to create a browser extension that can average the faces in every image of a face in the website and replace them with the average faces
- **Set World : The Online Game** 2023
  - A multi-player online game with mini-games similar to Club Penguin but revolves around the game SET
  - Designing animations, artworks, wrote music and full-stack development (friends, messaging, leaderboard, etc)
  - Link (work in progress, Chrome preferred): clamoodle.github.io/set-wrold/index.html
- **Undergraduate Teaching Assistant** 2022
  California Institute of Technology
  - Teaching assistant for Caltech's introductory course on probability models, ACM 116, covering topics such as moment generating functions, central limit theorem, and Poisson and counting processes
  - Grading homework sets and exams, answering students' questions, and holding weekly office hours
- **Summer Undergraduate Research Fellowship (SURF)** 2022
  California Institute of Technology, Tsinghua University
  - Original research in machine learning under the mentorship of Dr. Yanan Sui
  - Designing and improving on an Android-compatible deep learning model for human pose recognition in videos to diagnose patients with Parkinson's Disease, achieving 94% accuracy
- **Summer Undergraduate Research Fellowship (SURF)** 2021
  California Institute of Technology
  - Original research in mathematics (algebraic topology) under the mentorship of Dr. Lei Chen
  - Investigated the algebraic structure of diffeomorphisms groups and their actions on low dimensional manifolds
  - Proposed new proof structure which generalizes previously known results from 1-dimensional only to any $n \in \mathbb{N}$

Skills

- **Languages:** HTML, CSS, Javascript, Python (Pytorch, Pandas, Numpy, Matplotlib), MATLAB, LaTex, Java, C
- **Spoken Languages:** English (Native), Chinese (Native)

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.