Zeen (Harry) Chi

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Education

- **Massachusetts Institute of Technology (MIT)** — Cambridge, MA
  Undergraduate Exchange Student, Computer Science — *Feb. 2023 - Present*
  - **Coursework:** Advances in Computer Vision, Matrix Methods
- **ShanghaiTech University, School of Information Science and Technology (SIST)** — Shanghai, China
  B.Eng. Candidate, Computer Science — *Sept. 2020 - Present*
  - **Overall GPA:** 3.97/4.0 (rank 1/248 in SIST)
  - **Major GPA:** 4.0/4.0
  - **Selected coursework:** Computer Graphics (A+), Artificial Intelligence (A+), Introduction to Machine Learning (A+), Computer Architecture (A+), Mathematical Analysis I & II (A+ & A), Probability and Statistics (A+)

Research Experience

- **Implicit Neural Representations for Medical Videos** — Cambridge, MA
  Undergraduate researcher, MIT CSAIL, advised by Prof. Polina Golland — *Mar. 2023 - Present*
  - Designing an implicit neural representation method to build an atlas that captures intensity changes of medical videos
  - Following dynamic NeRF schemes to improve inter-frame motion consistency by computing optical flow
  - Adopting multi-scale hash encoding to accelerate training process and improve video super-resolution performance
- **Long-tailed Recognition in Human-Object Interaction Detection** — Shanghai, China
  Undergraduate Researcher, ShanghaiTech PLUS Lab, advised by Prof. Xuming He — *Sept. 2022 - Jan. 2023*
  - Proposed a method of introducing the overall information of human posture as a prior cue to improve the confidence level of the HOI detection output for the corresponding possible categories
  - Reviewed papers on cutting-edge Transformers-based HOI detection algorithms and investigated instances of long-tailed distribution, especially the double long-tail of objects and actions in HOI datasets, and their impacts on detection results
  - Applied and evaluated multiple existing mainstream methods to alleviate the long-tailed distribution of HOI datasets

Course Projects

- **Chinese Chess** [code] — Shanghai, China
  ShanghaiTech CS181: Artificial Intelligence — *Nov. 2022 - Jan. 2023*
  - Created a multi-functional Chinese Chess game with multiple AI agents via Python and C++
  - Built the game panel for human players, with Pygame for Python and JUCE for C++, respectively
  - Implemented three AI agents, including Minimax Search, Q-Learning, and Monte-Carlo Tree Search
- **Ray Tracing NURBS Surfaces** [code] — Shanghai, China
  ShanghaiTech CS171: Computer Graphics I — *Dec. 2022 - Jan. 2023*
  - Implemented a path tracer with global illumination for directly rendering untrimmed NURBS surfaces without tessellation; created more than 3300 C++ baseline
  - Applied surface refinement for better rendering quality and efficiency
  - Constructed a BVH to maintain the surface sub-patches and accelerate the ray-patch intersection process
- **Chrome Dino Minigame on Longan Nano** [code] — Shanghai, China
  ShanghaiTech CS110: Computer Architecture I — *May 2022 - June 2022*
  - Implemented Chrome Dino pixel game on Longan Nano development board with RISC-V assembly language and C
  - Utilized integrated and external buttons of the board for UI and game control, respectively
- **Who is Flying over?** [code][demo] — Shanghai, China
  ShanghaiTech SI100B: Introduction to Information Science and Technology — *Dec. 2020 - Jan. 2021*
  - Built a website on Raspberry Pi that displays real-time information about regional flights
  - Utilized web crawler for data fetching and simultaneously displayed the data via LED and website
  - Implemented a fancy control panel on the website for real-time human-computer interactions, including region selection and LED control
  - Won an Excellent Course Project Award **(Top 1)** [poster]

Honors and Awards

- ShanghaiTech **Scholarship** (**Top 2%** of SIST students) — Jan. 2022
- ShanghaiTech **Scholarship** (**Top 3%-7%** of SIST students) — Dec. 2022
- The **Outstanding Individual** of ShanghaiTech career trek program — Nov. 2022
- The **Outstanding Individual** of ShanghaiTech social research in Chinese poor areas — Nov. 2021
- **First Prize**, the 2018 National Olympiad in Informatics in Provinces, Shandong — Dec. 2018

Skills

- **Languages:** Python, C&C++
- **Tools:** PyTorch, Numpy, OpenGL, Git