Haohua Lyu

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Education

- **University of California, Berkeley** — Berkeley, CA
  Master of Engineering in EECS; **GPA: 3.95** — Aug 2021 - (Dec 2022)
  Courses: Immersive Computing and VR; Optimization Models; Applications of Parallel Computers; Computer Graphics
- **University of Pennsylvania** — Philadelphia, PA
  Bachelor of Arts in Political Science & Computer Science; **GPA: 3.95, Summa cum laude** — Aug 2018 - May 2021
  Courses: Artificial Intelligence; Crowdsourcing & Human Computation; Software Engineering; Internet and Web Systems; Computational Linear Algebra; Algorithm; Computer Architecture; Automata, Computability, and Complexity; Programming Languages and Techniques

Publication

- **Haohua Lyu**, Cyrus Vachha, Qianyi Chen, Odysseus Pyrinis, Avery Liou, Balasaravanan Thoravi Kumaravel, and Björn Hartmann. 2022. WebTransceiVR: Asymmetrical Communication Between Multiple VR and Non-VR Users Online. In Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI EA '22). Association for Computing Machinery, New York, NY, USA, Article 313, 1–7. https://doi.org/10.1145/3491101.3519816

Projects

- **WebTransceiVR - Asymmetric VR/non-VR communication at scale** — Berkeley, CA
  Team Member & Co-first Author — Sep 2021 - Present
  - **Paper published on CHI 2022 Late-Breaking Work**; link to ACM Library.
  - Researched online asymmetric communication between VR users and multiple non-VR users, supervised by Prof. Björn Hartmann;
  - Designed and developed a WebRTC-based network architecture to allow multiple non-VR users to join and interact with a VR virtual environment, and a cloud-based streaming solution to accommodate a large amount of spectators;
  - Led the team in writing and submitting the work to CHI 2022 Late-Breaking Work track;
  - A new iteration of the work focused on facilitating VR streaming with advanced camera control; An updated full paper with a qualitative user study is now submitted and being revised for CHI 2023.
- **Vision Correcting Display - Algorithm Parallelization & VR support** — Berkeley, CA
  Team Leader — Aug 2021 - Present
  - Researched vision-correcting display devices and algorithms under the guidance of Prof. Brian Barsky;
  - Refactored and accelerated algorithms using OpenCV, OpenMP, OpenCL, and Intel oneAPI, with **3x-20x faster performance**. Also developed and refined a benchmark tool for the project, as well as a cross-platform app for real-time correction of low-level aberration;
  - Conducted research on the application of VCD in Virtual Reality, with a prototype designed for Google Cardboard;
  - Took a leadership role in the VCD project since June 2022 to assist the PI; interviewed and recruited new members, arranged weekly meetings, and managed academic resources.

Experience

- **Tencent** — Beijing, China & Palo Alto, CA (Remote)
  Intern — Jun 2020 - Aug 2020
  - Joined Tencent Media Lab's Product Engineering team in Palo Alto as an intern;
  - Worked on a serverless video transcoding API and implemented features such as encrypted HLS streaming, cloud-based video processing, and frontend authentication;
  - Worked on a WebRTC cloud-rendering API and designed a serverless version using cloud functions;
  - Designed related interfaces, implemented SDKs, and created demo pages and documentation.
- **Geo-Vision** — Beijing, China
  Research Assistant — Jun 2021 - Aug 2021; Jun 2022 - Aug 2022
  - Joined Geo-Vision, a subsidiary of the Chinese Academy of Surveying and Mapping (CASM), as a research assistant under the guidance of Honorary Dean Liu Xianlin;
  - Worked on an automotive LiDAR project and conducted research on cloud computing of point-could analysis and visualization;
  - Implemented several technical prototypes involving 3D reconstruction and point-cloud analysis.

Honors and Awards

- UC Berkeley College of Engineering Fung Excellence Scholarship — Fall 2021, Spring 2022, Fall 2022
- Pi Sigma Alpha National Political Science Honor Society — Nov 2019 - Present
- Advisory Board Member of Political Science Department, University of Pennsylvania — Sep 2020 - May 2021
- Dean's List - Boston College, University of Pennsylvania