Mr. Wenbin ZHOU

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EDUCATION BACKGROUND

- **Department of Electrical and Electronic Engineering, The University of Hong Kong** Oct 2023- present
  Ph.D. Candidate in Computational Imaging & Mixed Representation Lab, advisor **Yifan (Evan) Peng**
- **Department of Computer Science, The University of Hong Kong** Sep 2022- Aug 2023
  Master of Science in Computer Science **(with Distinction), GPA: 4.20/4.30**
- **University of Science and Technology of China (USTC)**
  School of Physics Aug 2014- Jun 2018
  Bachelor of Natural Science in Applied Physics, **Major GPA: 3.82/4.30, Rank: 2nd/52**
  School of Computer Science and Technology Aug 2016- Jun 2018
  Minor in Computer Science

Major Awards: 2016 **National Scholarship (3/355)**, 2015 Kwang-Hua Scholarship (9/355), The First Prize of 2015 Chinese Mathematics Competitions (Top 5%)

VISITING POSITIONS

- **Computer Graphics Department, Purdue University** Aug 2018- Jun 2020
  Research Assistant in High Performance Computer Graphics Lab, advisor **Bedrich Benes**
- **Department of EECS, University of California, Berkeley** Jun 2017- Dec 2017
  Research Assistant, host **Brian A. Barsky**

RESEARCH EXPERIENCES

- **3D-HoloNet** | The University of Hong Kong | PhD Student 2025
  Advisor: **Yifan (Evan) Peng,** Assistant Professor at Department of EEE, HKU
  - Proposed 3D-HoloNet, a non-iterative deep learning framework capable of generating high-fidelity 3D phase-only holograms in real-time (30 fps)
  - Designed a learned, camera-calibrated wave propagation model to automatically compensate for hardware imperfections and eliminate the need for bulky optical filters
  - Achieved superior reconstruction quality across multiple depth planes compared to traditional iterative methods (e.g., SGD, DPAC) while significantly reducing inference time

Publications: 3D-HoloNet: fast, unfiltered, 3D hologram generation with camera-calibrated network learning (**First Author**), published in Optics Letters (Vol. 50, No. 4, 2025).

- **Holographic AR Head-up Display with Geometry Optical Combiner and Learned Calibration** 2025
  Advisor: **Yifan (Evan) Peng,** Assistant Professor at Department of EEE, HKU
  - Developed a holographic AR-HUD prototype leveraging off-the-shelf freeform optical combiners (windshield) to reduce system cost and form factor
  - Implemented a learned, camera-calibrated forward model to correct complex optical aberrations and geometric distortions induced by the curved combiner
  - Validated the system experimentally, demonstrating precise 3D depth cues and aligned defocus effects consistent with real-world scenes

Publications: Empowering Head-up AR: Leveraging Holographic Display Engine, Geometry Optical Combiner, and Learned Calibration (**First Author**), to appear in SIGGRAPH Asia 2025 (Emerging Technologies).

- **Multi-illumination-interfered Neural Holography with Expanded Eyebox** 2025
  Advisor: **Yifan (Evan) Peng,** Assistant Professor at Department of EEE, HKU
  - Collaborated on the development of "Pupil-HOGD," an optimization algorithm that accounts for higher-order diffraction and pupil constraints to improve image fidelity
  - Contributed to the design of a dual-angle illumination system that successfully expanded the holographic display eyebox by 50% horizontally
  - Integrated camera-in-the-loop (CITL) calibration to ensure consistent visual quality under dynamic pupil positions and mitigate aliasing artifacts

Publications: Multi-illumination-interfered Neural Holography with Expanded Eyebox (Co-Author), published in IEEE Transactions on Visualization and Computer Graphics (TVCG 2025).

- **Emotion Recognition from Real-Time Videos** | Purdue University | Research Assistant Aug 2018- Jun 2020
  Advisor: **Bedrich Benes,** George W. McNelly Professor of Technology, Purdue University
  - Collected more than 800k facial images with emotion labels to retrain the VGG_S network via transfer learning
  - Adopt the Russel's model of core affect to classify the emotion into 4 quadrants and achieve 66% overall test accuracy
  - Implemented a working application that is capable of reporting the user emotional state in real-time

Publications: Deep Learning-based Emotion Recognition from Real-Time Videos (**First Author**) and The Effects of Body Gestures and Gender on Viewer's Perception of Animated Pedagogical Agent's Emotions (**Second Author**), were included in *HCI International 2020* and published in *Multimodal and Natural Interaction, Springer International Publishing*.

- **Vision Correcting Display Project** | University of California, Berkeley | Research Assistant Jun 2017- Dec 2017
  Advisor: **Brian A. Barsky**, professor at School of Electronic Engineer and Computer Science, UC Berkeley
  - Accelerated two previous prefilter algorithms by 86% faster (210ms -> 30ms) and 99.6% faster (270s -> less than 1s)
  - Created the Precise Forward Algorithm which reduced the rmse of simulation result from 24000 to 8000
  - Created the Average Filling Method and Middle Method which made the result brighter and clearer
  - Did the calculation in binocular situation by the binocular simulation algorithm and binocular prefilter algorithm
- **Multiple-fluid Simulation Based on SPH Method** | USTC | Research Assistant Jun 2017- Jun 2018
  Advisor: **Ligang Liu**, professor at School of Mathematics, USTC
  - Adopt the mixture model and the volume fraction with traditional SPH method to calculate the kinematics of mixed fluid
  - Implemented the algorithm with particle system using C++ and Direct3D
  - Did the experiment of the dissolution process between two miscible fluids and two immiscible fluids
  - Rendered the surface of the fluids using Houdini to make the results look more realistic
- **Library Robot Project** | USTC | Team Leader Jun 2016- Oct 2016
  Advisor: **Shengxiao GUAN**, associate professor at School of Information Science and Technology, USTC
  - Wrote 10k lines of efficient code on STM32 for the project to make sure the robot could work under most circumstance
  - Proposed an innovative solution by using gyroscope to let the lift platform raising smoothly and quickly
  - Led a team with four members and finally made a practical robot helping people return the book in library automatically

EXTRACURRICULAR ACTIVITIES

- **Student Union**, School of Physical Science, USTC | Activity Group Leader Sep 2014- Jun 2016
  - Held a fun running activity called "Color Run----The happiest 5k on the planet", with more than 300 student participants
  - Organized four annual technical training speeches about computer science, including Java, Html, Mathematica, and MATLAB, to help physical students improve their coding skills

ADDITIONAL INFORMATION

- **English Proficiency:** TOEFL 102, GRE 321
- **Software skills:** Proficient in C/C++, Python, OpenGL, OpenCV, PyTorch, Unity 3D, Mathematica, MATLAB, Origin