KAIYING HAN

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EDUCATION

The Chinese University of Hong Kong, Shenzhen *September 2021 - Present*
Bachelor of Engineering in Computer Engineering
Dean List Award Student with cGPA 3.59/4.00 mGPA: 3.73/4.00

PUBLICATION

LiveVV: Human-Centered Live Volumetric Video Streaming System
Hu, K., Chen, Y., **Han, K**., Liu, J., Yang, H., Jin, Y., ..., Wang, F. (2023).
DOI: LiveVV: Human-Centered Live Volumetric Video Streaming System

RESEARCH

FishSense: Underwater Fish Segmentation *July 2024 - Present*
UC San Diego *Supervised by Prof. Ryan Kastner*

· Developed an innovative pipeline for underwater instance segmentation using depth-guided vision transformers (ViT) and the Segment Anything Model (SAM) especially for precise fish mask generation.
· Integrated depth estimation and guidance scheduling to enhance underwater instance segmentation.
· Deployed diffusion prior and custom multi-layer perceptrons (MLP) to mitigate underwater image distortions, improving segmentation performance in challenging aquatic conditions.

LiveVV: Streaming System for Volumetric Videos *September 2023 - March 2024*
CUHK Shenzhen *Supervided by Prof. Fangxin Wang*

· Architected holistic live volumetric video streaming system with multi-view capture, segmentation, adaptive transmission, and rendering, providing immersive eXtended Reality (XR) experience.
· Pioneered adaptable volumetric video generation using body tracking neural networks and skeleton data for camera calibration.
· Optimized bandwidth via adaptive segmentation/decimation leveraging body information. Conducted experiments balancing visual performance and bandwidth efficiency.

PROJECT

Smooth Mesh Estimation

· Developed a real-time 3D mesh reconstruction algorithm using depth data and sparse landmarks from visual odometry.
· Implemented a non-smooth convex optimization problem solved with a primal-dual method for generating smooth and accurate 3D meshes.
· Github Link: Smooth Mesh Estimation

Natural Language Query System for Supermarket Database

· Integrated Large Language Model (LLM) technology with a supermarket database, enabling natural language queries and implementing Retrieval-Augmented Generation (RAG).
· Designed and developed a user-friendly front-end interface for seamless human-computer interaction.
· Github Link: Natural Language Query System for Supermarket Database

SKILLS

Programming Languages	Python, MySQL, Bash, C/C++, Verilog, VHDL, HTML
Core Extensions	Pandas, Matplotlib, Numpy, Scipy, Pytorch, Opencv
	Opengl, Open3d, Jupyter, MATLAB, Git, LaTeX