

Liujie Zheng

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EDUCATION

- **University of North Carolina at Chapel Hill** Chapel Hill, NC
 - B.S. in Computer Science, B.S. in Statistics and Analytics Aug 2020 - Dec 2024
 - **GPA:** 3.89 | Dean's List

WORK EXPERIENCE

- **University of North Carolina at Chapel Hill** Chapel Hill, NC
 - Undergraduate Research Assistant at Graphics & Virtual Reality Group Sep 2022 - Present
 - **Advisors:** Dr. Henry Fuchs and Dr. Praneeth Chakravarthula
 - **Research Focus:**
 - * Real-time human novel view synthesis.
 - * Visually-informed novel view synthesis in acoustics.




RESEARCH EXPERIENCE

- **Desktop Telepresence System with 3D Gaussian Splatting** Chapel Hill, NC
 - Advisors: Dr. Henry Fuchs and Dr. Roni Sengupta (she/her) Sep 2022 - Present
 - **Real-time Novel View Synthesis:** Proposed and implemented a real-time novel view synthesis pipeline based on 3D Gaussian Splatting for the desktop telepresence system.
 - **U-Net Video Autoencoder:** Designed and implemented a U-Net-based autoencoder tailored for video processing in the study of memory-augmented neural networks.
- **Novel View Synthesis in Acoustics** Chapel Hill, NC
 - Advisor: Dr. Praneeth Chakravarthula May 2023 - Present
 - **Neural Binaural Audio Field:** Proposed a hybrid model incorporating acoustic synthesis blocks and a Head-Related Transfer Function (HRTF) module to learn the transfer function that represents the binaural audio effects.
 - **Depth Estimation:** Implemented a depth estimation pipeline to enhance the existing Replay dataset.

PUBLICATIONS

- **Visually-Informed Neural Binaural Audio Field**
Guansen Tong*, **Liujie Zheng***, Haosheng Shi*, Shengze Wang, Grace Fei, Praneeth Chakravarthula
Under Review *SIGGRAPH 2024*
- **Bringing Telepresence to Every Desk**
Shengze Wang, Ziheng Wang, Ryan Schmelzle, **Liujie Zheng**, YoungJoong Kwon, Roni Sengupta, Henry Fuchs
Under Review *TVCG 2024* [arXiv] [website]

PROJECTS

- **Voice to Image Generation on VR**  Dec 2023
 - **Voice to Image Pipeline:** Developed a voice-to-text-to-image pipeline using the Hugging Face Unity API, enabling rapid image generation from vocal inputs.
 - **Mixed Reality:** Engineered immersive mixed reality experiences using the Unity Engine. This included implementing locomotion, object interaction, and gesture tracking features on Meta Quest 3.
- **Face to BMI Prediction**  May 2023
 - **Data Augmentation:** Implemented data augmentation techniques in PyTorch to enhance the dataset, resulting in a 14% increase in model accuracy and robustness across various conditions.
 - **Feature Extraction:** Deployed the Vision Transformer model in PyTorch for facial feature extraction, surpassing state-of-the-art benchmarks on the VisualBMI dataset as of May 2023 by 39.5%.
- **Panorama Stitching**  Feb 2023
 - **Feature Detection:** Applied scale-invariant feature transform detector to detect and describe features in input images with OpenCV.
 - **Image Alignment and Blending:** Implemented random sample consensus technique for feature matching. Aligned and blended the input images to stitch a panorama with OpenCV.

TEACHING EXPERIENCES

- **University of North Carolina at Chapel Hill**

Chapel Hill, NC

◦ **Learning Assistant:** Computer Vision in 3D World

◦ **Learning Assistant:** Data Structures and Analysis

Aug 2023 - Dec 2023
Jan 2023 - May 2023