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**: 3.91 | Dean's List for 6 semesters

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.
    - Robust 3D Gaussian Splatting.

Research Experience

- **Efficient Streaming of Neural Free-Viewpoint Videos** — Chapel Hill, NC
  Advisors: Prof. Henry Fuchs — May 2024 - Present
  - **Neural Videos**: Proposed an efficient framework that achieves buffer-free generation of neural videos, by leveraging the structure / color partitions in MLPs.
- **Desktop Telepresence System with 3D Gaussian Splatting** — Chapel Hill, NC
  Advisors: Prof. Henry Fuchs and Prof. Roni Sengupta — 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.
- **Novel View Synthesis in Acoustics** — Chapel Hill, NC
  Advisor: Prof. Praneeth Chakravarthula — May 2023 - Jan 2024
  - **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.

Publications

- **Learning View Synthesis for Desktop Telepresence with Few RGBD Cameras**
  Shengze Wang, Ziheng Wang, Ryan Schmelzle, **Liujie Zheng**, YoungJoong Kwon, Roni Sengupta, Henry Fuchs
  IEEE TVCG 2024 [paper] [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%.

Teaching Experiences

- **University of North Carolina at Chapel Hill** — Chapel Hill, NC
  - **Learning Assistant**: Computer Vision in 3D World — Aug 2023 - Dec 2023
  - **Learning Assistant**: Data Structures and Analysis — Jan 2023 - May 2023