Tao Jin

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RESEARCH INTERESTS

Real-Time 3D Reconstruction, Volumetric Video, Hybrid Rendering and Streaming, AR/VR Systems, Simultaneous Localization and Mapping, Pervasive Computing, Embedded Systems

EDUCATION

Carnegie Mellon University, Pittsburgh, PA — Jan. 2022 — Present
Ph.D. in Electrical and Computer Engineering, Advisor: Anthony Rowe

Carnegie Mellon University, Pittsburgh, PA — Aug. 2020 — Dec. 2021
Master of Science in Electrical and Computer Engineering

University of Washington, Seattle, WA — Sept. 2016 — Jun. 2020
Bechalor of Science in Electrical Engineering — Overall GPA: 3.74 — Major GPA 3.83

PUBLICATION

DART: Implicit Doppler Tomography for Radar Novel View Synthesis, CVPR 2024
Tianshu Huang*, John Miller*, Akarsh Prabhakara, **Tao Jin**, Tarana Laroia, Zico Kolter, Anthony Rowe

MeshReduce: Scalable and Bandwidth Efficient 3D Scene Capture, IEEE VR 2024
Tao Jin, Mallesham Dasari, Connor Smith, Kittipat Apicharttrisorn, Srinivasan Seshan, Anthony Rowe

StageAR: Markerless Mobile Phone Localization for AR in Live Events, IEEE VR 2024
Tao Jin, Shengxi Wu, Mallesham Dasari, Kittipat Apicharttrisorn, Anthony Rowe

High Resolution Point Clouds from mmWave Radar, IEEE ICRA 2023
Akarsh Prabhakara, **Tao Jin**, Arnav Das, Gantavya Bhatt, Lilly Kumari, Elahe Soltanaghai, Jeff Bilmes, Swarun Kumar, Anthony Rowe

DEMONSTRATION

Demo: **MeshReduce: Split Rendering of Live 3D Scene for Virtual Teleportation**, IEEE VR 2024
Tao Jin, Edward Lu, Mallesham Dasari, Connor Smith, Kittipat Apicharttrisorn, Srinivasan Seshan, Anthony Rowe

Demo: **RadarHD: Demonstrating Lidar-like Point Clouds from mmWave Radar**, ACM MobiCom 2023
Akarsh Prabhakara, **Tao Jin**, Arnav Das, Gantavya Bhatt, Lilly Kumari, Elahe Soltanaghai, Jeff Bilmes, Swarun Kumar, Anthony Rowe

Demo: **Live 3D Scene Capture for Virtual Teleportation**, ACM Sensys 2022
Tao Jin, Mallesham Dasari, Connor Smith, Kittipat Apicharttrisorn, Anthony Rowe, Srinivasan Seshan

WORK EXPERIENCE

Magic Leap — Remote
Research Intern, Host: Connor Smith, David Chu — Jun. 2022 - Aug. 2022

- Worked on volumetric video capture streaming with fixed infra sensors and mobile AR headsets. Innovated on the capture-streaming architecture that resulted in a scalable and bandwidth efficient volumetric capture system.

RESEARCH EXPERIENCE

Wireless Sensing and Embedded Systems Lab — Jan. 2021 - Present
Carnegie Mellon University, Advisor: Anthony Rowe

- Designed and implemented a real-time volumetric streaming system based on textured mesh representation, and supports heterogenous sensor inputs (LiDAR, RGB-D cameras)
- Designed bitrate adaptation logic for real-time streaming over network
- Researched volumetric content perceptual quality evaluation metric

Personal Robotics Lab — Mar. 2019 - Mar. 2020
University of Washington, Advisor: Siddhartha Srinivasa

- Joined the project that develops algorithms and technologies towards a robotic system that can autonomously feed people with upper-extremity mobility impairments.
- Implemented hardware controller-level E-Stop for power wheelchair and robotic arm (ROS).
- Designed and developed and integrated speech interface (C, ROS, JavaScript) for robotic system.
- Improved latency of power wheelchair control by 30% through multithreading (CAN, Python).

SKILLS

- **Languages:** C/C++, Python, Java, System Verilog, ROS, JavaScript, Shell Scripting.

TEACHING EXPERIENCE

18-453: Introduction to XR Systems, Carnegie Mellon University, *Fall 2023*
Instructor: Anthony Rowe, Aswin C. Sankaranarayanan

18-449: Distributed Embedded Systems, Carnegie Mellon University, *Spring 2022*
Instructor: Anthony Rowe

18-500: ECE Design Experience, Carnegie Mellon University, *Fall 2021, Spring 2021*
Instructor: Tamal Mukherjee, Gary Fedder, Hyong Kim

EE-474: Intro to Embedded Systems, University of Washington, *Summer 2019, Fall 2019, Fall 2020, Spring 2020*
Instructor: Rania Hussein

SELECTED COURSEWORK

- Computer Vision
- Computer Graphics
- Computational Photography
- Simultaneous Localization and Mapping
- Real-time Embedded Systems
- Advanced Cloud Computing

AWARDS

- **Carnegie Institute of Technology Dean's Fellowship, 2022-2023**
- **Best demo award at CONIX Research Center, 2021, 2022**
- **CMU Cylab contribution recognition, Nov. 2022**