

Yongfan(Steff) Liu

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EDUCATION

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Anticipate Grad. 26.12

CPT/OPT

University of California, Irvine - Irvine, U.S.

Sept. 2020 – Present

The Henry Samueli School of Engineering — Ph.D. in Computer Engineering

Southeast University - Nanjing, China

Sept. 2016 – June 2020

Chien-Shiung Wu (Honor) College — Bachelor of Computer Science and Technology

RWTH Aachen - Aachen, Germany

Jan. 2018 – Mar. 2018

Germany Smart Industrial 4.0 Winter Camps Study Project

TECHNICAL SKILLS

Programming Languages: Python, Java, C++, MATLAB, JavaScript

Frameworks/Tools: PyTorch, TensorFlow, OpenCV, SNPE SDK

Research Areas: Computer Vision, 3D Reconstruction, Edge AI, Light-weight Model, Model Quantization

Development Platforms: NVIDIA Orin Jetson Nano, Qualcomm Snapdragon, Qualcomm Automotive Platform

EXPERIENCE

ILLIXR (Illinois Extended Reality) Lab

Oct. 2024 – Present

Collaborator – Efficient 3D Reconstruction with XR devices

UIUC, IL & UC Irvine, CA

- Designed a graph-based memory bank mechanism for VGGT, enabling streaming input and achieving up to $6.3\times$ faster inference while maintaining constant peak memory usage.
- Modeled frame-to-frame relationships using a graph structure, significantly improving ViT efficiency for AR/VR and long-content scenarios; outperforms the SOTA baseline by 20.7%, 5.9%, and 5.3% in camera pose accuracy, depth accuracy, and 3D reconstruction quality, respectively.
- Submitted one paper under review at CVPR 2026.

Intelligent System Architecture Laboratory

Mar. 2023 – Nov. 2025

Graduate Researcher – Efficient Depth Estimation with Meta Glasses

UC Irvine, CA

- Proposed hardware-friendly novel efficient model with MultiHead Cost Volume, decreased inference latency by 7% and decreased error rate by 17% comparing with previous model
- Proposed Rectification Positional Encoding (RPE) to enable fast online stereo rectification, reducing inference latency by 43% and lowering the overall pipeline error rate by 42%.
- Implemented models with cross-compiling and quantization skills on Qualcomm Snapdragon devices, Nvidia Orin Jetson, and next-generation AR glasses, *Aria*.
- Published one paper to **CVPR 2025**

NIO – Electric vehicle manufacturer

June 2024 – Sept. 2024

Internship – Digital Cockpit Department

San Jose, CA

- Acceleration and deployment of large language models on heterogeneous in-vehicle devices**
- Optimized language model inference with speculative sampling, achieving a $2.5\times$ speedup.
- Deployed large language models on NVIDIA Orin Jetson Nano and Qualcomm SA-8295P platforms.
- Collaborated with other team members on generative models, including diffusion-based image synthesis.

Irvine Vision Laboratory

Nov. 2025 – Present

Leading Student – Air quality prediction with hyperspectrum images by SmolVLM

Irvine, CA

- Integrated pressure, humidity, and hyperspectral imaging data to predict ground-level air quality using Vision-Language Models (VLMs), improving multi-modal environmental sensing performance.

PUBLICATIONS & PATENTS

[C.2] **Yongfan Liu**, Boyuan Tian, Rahul Singh, Sarita Adve, and Hyoukjun Kwon: MBVGGT: Adapting VGGT for Long Video Sequences via Graph Memory Bank. Under review of CVPR 2026

[C.1] **Yongfan Liu** and Hyoukjun Kwon: Efficient Depth Estimation for Unstable Stereo Camera Systems on AR Glasses. Accepted by **CVPR 2025**

[P.1] Brain Tissue Segmentation Method Based on Local Binary Pattern Texture Operator with Voxel-wise Diagonalization (*translated from Chinese*), CN110728685B · Issued 2023-04-07

[J.1] **Yongfan Liu**, Sen Du and Youyong Kong: Supervoxel Clustering with a Novel 3D Descriptor for Brain Tissue Segmentation. ACMMLC 2020 & IJMLC [ISSN: 2010-3700 (Online)]