

Weizhe Liu

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PERSONAL INFO

I'm a Senior Research Scientist at Tencent, my current work is 3D AIGC.

RESEARCH INTERESTS

3D Reconstruction, AIGC, 3D Scene Understanding, Crowd Analysis (Counting, Localization and Motion), Video Understanding, Action Recognition, Semantic Segmentation, Domain Adaptation, Learning with Less Supervision

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL)

Ph.D. in Computer Science

Lausanne, Switzerland

Sept. 2017 – Nov. 2021

Title of Thesis: Human-Centered Scene Understanding via Crowd Counting

Advisor: Prof. Pascal Fua

Research Group: Computer Vision Laboratory

University of California, Los Angeles (UCLA)

Visiting Scholar

Los Angeles, US

Sept. 2016 – Mar. 2017

Advisor: Prof. Stefano Soatto

Research Group: UCLA Vision Lab

École Polytechnique Fédérale de Lausanne (EPFL)

M.Sc. in Communication Systems

Lausanne, Switzerland

Sept. 2014 – Apr. 2017

Title of Thesis: Active Perception Using Recurrent Neural Networks

Advisor: Prof. Stefano Soatto and Prof. Pascal Fua

University of Electronic Science and Technology of China (UESTC)

B.Eng in Electronic and Information Engineering

Chengdu, China

Sept. 2010 – July 2014

Title of Thesis: Video Compressing With H.264

Advisor: Prof. Feng Fan

WORK EXPERIENCE

Tencent

Senior Research Scientist, TechLead

Shanghai, China

Feb. 2022 – Present

Project: 3D AIGC with different input modalities

École Polytechnique Fédérale de Lausanne (EPFL)

Graduate Student Researcher

Lausanne, Switzerland

June 2017 – Jan. 2022

Project: Human-Centered Scene Understanding via Crowd Counting

Advisor: Prof. Pascal Fua

Microsoft

Research Intern

Zurich, Switzerland

Apr. 2021 – June 2021

Project: Video Alignment for Action Recognition in Mixed Reality Environment

Mentor: Dr. Bugra Tekin and Prof. Marc Pollefeys

Amazon

Research Intern

Graz, Austria

July 2020 – Oct. 2020

Project: Domain Adaptation for Semantic Segmentation

Mentor: Dr. Christian Leistner

NVISO

Computer Vision Engineer Intern

Lausanne, Switzerland

Feb. 2016 – Aug. 2016

Project: Lightweight Caffe Framework for Mobile Devices

Mentor: Timothy Ilewellynn and Dr. Matteo Sorci

PREPRINTS

- [1] R. Cui, X. Song, W. Sun, S. Wang, **W. Liu**, S. Chen, T. Shang, Y. Li, N. Barnes, H. Li and P. Ji. LAM3D: Large Image-Point-Cloud Alignment Model for 3D Reconstruction from Single Image. arXiv:2405.15622.
- [2] H. Yan, Y. Li, Z. Wu, S. Chen, W. Sun, T. Shang, **W. Liu**, T. Chen, X. Dai, C. Ma, H. Li and P. Ji. Frankenstein: Generating Semantic-Compositional 3D Scenes in One Tri-Plane. arXiv:2403.16210.

PUBLICATIONS

- [1] R. Cui, **W. Liu**[†], W. Sun, S. Wang, T. Shang, Y. Li, X. Song, H. Yan, Z. Wu, S. Chen, H. Li and P. Ji. Neusdfusion: A spatial-aware generative model for 3d shape completion, reconstruction, and generation *The European Conference on Computer Vision (ECCV)*, 2024.
- [2] Z. Wu, Y. Li, H. Yan, T. Shang, W. Sun, S. Wang, R. Cui, **W. Liu**, H. Sato, H. Li and P. Ji. BlockFusion: Expandable 3D Scene Generation using Latent Tri-plane Extrapolation. *ACM Transactions on Graphics (SIGGRAPH)*, 2024.
- [3] M. Engilberge, **W. Liu** and P. Fua. Multi-view Tracking Using Weakly Supervised Human Motion Prediction. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2023.
- [4] **W. Liu**, B. Tekin, H. Coskun, V. Vineet, P. Fua and M. Pollefeys. Learning to Align Sequential Actions in the Wild. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- [5] **W. Liu**, N. Durasov and P. Fua. Leveraging Self-Supervision for Cross-Domain Crowd Counting. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022 (**Oral**).
- [6] **W. Liu**, M. Salzmann and P. Fua. Counting People by Estimating People Flows. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2021.
- [7] **W. Liu**, M. Salzmann and P. Fua. Estimating People Flows to Better Count Them in Crowded Scenes. *The European Conference on Computer Vision (ECCV)*, 2020.
- [8] **W. Liu**, K. Lis, M. Salzmann and P. Fua. Geometric and Physical Constraints for Drone-Based Head Plane Crowd Density Estimation. *The IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.
- [9] **W. Liu**, M. Salzmann and P. Fua. Context-Aware Crowd Counting. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.

PROFESSIONAL SERVICES

- Reviewer of major computer vision and machine learning conferences (*CVPR*, *ICCV*, *ECCV*, *ICML*, *ICLR*, *NeurIPS*) and journals (*T-PAMI*, *IJCV*, *TIP*)
- Outstanding reviewer of *ECCV* 2022.

RELEVANT SKILLS

Programming Language: Python, C++, MATLAB

Software Framework: PyTorch, OpenCV, TensorFlow, SNPE, Caffe

Others: Unreal Engine