

# Weizhe Liu

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## PERSONAL INFO

I'm a Senior Research Scientist and TechLead 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.

## PUBLICATIONS

- [1] 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. *SIGGRAPH Asia*, 2024.
- [2] R. Cui, **W. Liu**<sup>†</sup>, 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.
- [3] 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.
- [4] 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.
- [5] **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.
- [6] **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**).
- [7] **W. Liu**, M. Salzmann and P. Fua. Counting People by Estimating People Flows. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2021.
- [8] **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.
- [9] **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.
- [10] **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