Weizhe Liu

weizheliu1991@163.com | https://weizheliu.github.io

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) — Lausanne, Switzerland
Ph.D. in Computer Science — 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) — Los Angeles, US
Visiting Scholar — Sept. 2016 – Mar. 2017
Advisor: Prof. Stefano Soatto
Research Group: UCLA Vision Lab

École Polytechnique Fédérale de Lausanne (EPFL) — Lausanne, Switzerland
M.Sc. in Communication Systems — 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) — Chengdu, China
B.Eng in Electronic and Information Engineering — Sept. 2010 – July 2014
Title of Thesis: Video Compressing With H.264
Advisor: Prof. Feng Fan

WORK EXPERIENCE

Tencent — Shanghai, China
Senior Research Scientist, TechLead — Feb. 2022 – Present
Project: 3D AIGC with Different Input Modalities

École Polytechnique Fédérale de Lausanne (EPFL) — Lausanne, Switzerland
Graduate Student Researcher — June 2017 – Jan. 2022
Project: Human-Centered Scene Understanding via Crowd Counting
Advisor: Prof. Pascal Fua

Microsoft — Zurich, Switzerland
Research Intern — Apr. 2021 – June 2021
Project: Video Alignment for Action Recognition in Mixed Reality Environment
Mentor: Dr. Bugra Tekin and Prof. Marc Pollefeys

Amazon — Graz, Austria
Research Intern — July 2020 – Oct. 2020
Project: Domain Adaptation for Semantic Segmentation
Mentor: Dr. Christian Leistner

NVISO — Lausanne, Switzerland
Computer Vision Engineer Intern — Feb. 2016 – Aug. 2016
Project: Lightweight Caffe Framework for Mobile Devices
Mentor: Timothy llewellynn 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