Weizhe Liu

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PERSONAL INFO

I'm a Senior Research Scientist at Tencent XR Vision Labs, my current work is 3D reconstruction for XR applications.

RESEARCH INTERESTS

3D Vision, 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 — Feb. 2022 – Present
Project: 3D Reconstruction for XR Applications

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 Mixed Reality & AI Lab — 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 Prime Air — 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] **W. Liu**, D. Ferstl, S. Schulter, L. Zebedin, P. Fua and C. Leistner. Domain Adaptation for Semantic Segmentation via Patch-Wise Contrastive Learning. arXiv:2104.11056.

[2] **W. Liu**, M. Salzmann and P. Fua. Using Depth for Pixel-Wise Detection of Adversarial Attacks in Crowd Counting. arXiv:1911.11484.

PUBLICATIONS

[1] **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.

[2] **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**).

[3] **W. Liu**, M. Salzmann and P. Fua. Counting People by Estimating People Flows. *IEEE Transactions on Pattern Analysis and Machine Intelligence* (TPAMI), 2021.

[4] **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.

[5] **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.

[6] **W. Liu**, M. Salzmann and P. Fua. Context-Aware Crowd Counting. *The IEEE Conference on Computer Vision and Pattern Recognition* (CVPR), 2019.

TEACHING

- CS-233(a), Introduction to machine learning(BA3)
- CS-233(b), Introduction to machine learning (BA4)
- MATH-233, Probabilities and statistics
- MATH-101(e), Analysis I

PROFESSIONAL SERVICES

Reviewer of major computer vision conferences (*CVPR*, *ICCV*, *ECCV*) and journals (*T-PAMI*, *IJCV*, *TIP*).

RELEVANT SKILLS

Programming Language: Python, MATLAB, C++
Software Framework: PyTorch, OpenCV, TensorFlow, Caffe
Others: Unreal Engine