# Weijian Xu

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CONTACT
INFORMATION

Microsoft
One Microsoft Way
Redmond, WA 98052

*Phone*: +1 (858) 888-6347
*E-mail*: weijianxu@microsoft.com
*Website*: https://weijianxu.com

RESEARCH
INTERESTS

Deep Learning and Computer Vision

EDUCATION

**University of California San Diego**, La Jolla, CA     **2018 - 2022**
    *Ph.D. in Computer Science*
- Advisor: Prof. Zhuowen Tu
- Co-advisor: Prof. Hao Su

**University of California San Diego**, La Jolla, CA     **2016 - 2018**
    *M.S. in Computer Science*
- Overall GPA: 3.97/4.00
- AI track GPA: 4.00/4.00

**Beihang University**, Beijing, China     **2012 - 2016**
    *B.E. in Computer Science*
- Selected into Honors College
- Overall GPA: 3.88/4.00

RESEARCH
EXPERIENCE

**Microsoft Azure AI**, Redmond, WA     **2022 - Present**
*Senior Researcher*
Member of the Microsoft GenAI / MAC research team. Focus
on research and engineering for multi-modal models.

**University of California San Diego**, La Jolla, CA     **2017 - 2022**
*Graduate Research Assistant*, Advisor: Prof. Zhuowen Tu
- Focus on visual representation learning and apply it to a wide range of applications.
- Explored the Transformers in vision models, focusing on task decoder and backbone design. Related works are accepted by CVPR 2021 and ICCV 2021.
- Developed an attentional constellation model for few-shot image classification. This work is accepted by ICLR 2021.
- Developed a geometry-aware skeleton detection method with a weighted Hausdorff distance and a geometrically weighted cross-entropy loss. This work is accepted by BMVC 2019.
- Developed the Wasserstein introspective neural network and applied it to 2D and 3D generative models. Related works are accepted by CVPR 2018 and AAAI 2019.

**Microsoft AI - Autonomous Systems**, Redmond, WA     **2021**
*Research Intern*, Mentor: Dr. Shuang Ma
Developed a Transformer-based multi-modal representation for autonomous tasks.

**Microsoft Cloud and AI**, Redmond, WA     **2020**
*Research Intern*, Mentor: Dr. Baoyuan Wang
Developed a self-supervised face representation learning framework
for detection, tracking and other downstream tasks.

**Facebook AI Applied Research**, Menlo Park, CA                                                      **2019**
*Research Intern*, Mentor: Prof. Tamara Berg
Developed a robust fashion representation for instance retrieval task by restoring deformed instances and masking occluded features.

**Microsoft Research Asia**, Beijing, China                                                      **2018**
*Research Intern*, Mentor: Dr. Jingdong Wang
Developed a few-shot learning algorithm by applying task-dependent disentangled feature transformation into feature embedding.

PUBLICATIONS

11. Bin Xiao, Haiping Wu*, **Weijian Xu**\*, Xiyang Dai, Houdong Hu, Yumao Lu, Michael Zeng, Ce Liu, Lu Yuan. Florence-2: Advancing a Unified Representation for a Variety of Vision Tasks. In *IEEE/CVF Computer Vision and Pattern Recognition* (CVPR), 2024 (**Oral**, 0.78% acceptance rate).

10. Justin Lazarow, **Weijian Xu**, and Zhuowen Tu. Instance Segmentation With Mask-Supervised Polygonal Boundary Transformers. In *IEEE/CVF Computer Vision and Pattern Recognition* (CVPR), 2022.

9. **Weijian Xu**\*, Yifan Xu*, Tyler Chang, and Zhuowen Tu. Co-Scale Conv-Attentional Image Transformers. In *IEEE/CVF International Conference on Computer Vision* (ICCV), 2021 (**Oral**, 3.4% acceptance rate).

8. Tyler Chang, Yifan Xu, **Weijian Xu**, and Zhuowen Tu. Convolutions and Self-Attention: Re-interpreting Relative Positions in Pre-trained Language Models. In *Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing* (ACL-IJCNLP), 2021.

7. Yifan Xu*, **Weijian Xu**\*, David Cheung, and Zhuowen Tu. Line Segment Detection Using Transformers without Edges. In *IEEE/CVF Computer Vision and Pattern Recognition* (CVPR), 2021 (**Oral**, 4.3% acceptance rate).

6. Ke Li*, Shijie Wang*, Xiang Zhang*, Yifan Xu, *Weijian Xu*, and Zhuowen Tu. Pose Recognition with Cascade Transformers. In *IEEE/CVF Computer Vision and Pattern Recognition* (CVPR), 2021.

5. **Weijian Xu**\*, Yifan Xu*, Huaijin Wang*, and Zhuowen Tu. Attentional Constellation Nets for Few-Shot Learning. In *The Ninth International Conference on Learning Representations* (ICLR), 2021.

4. Zheng Ding, Yifan Xu, **Weijian Xu**, Gaurav Parmar, Yang Yang, Max Welling, and Zhuowen Tu. Guided Variational Auto-Encoder for Disentanglement Learning. In *IEEE/CVF Computer Vision and Pattern Recognition* (CVPR), 2020.

3. **Weijian Xu**, Gaurav Parmar, and Zhuowen Tu. Geometry-Aware End-to-End Skeleton Detection. In *British Machine Vision Conference* (BMVC), 2019.

2. Wenlong Huang*, Brian Lai*, **Weijian Xu**, and Zhuowen Tu. 3D Volumetric Modeling with Introspective Neural Networks. In *the Thirty-Third AAAI Conference on Artificial Intelligence* (AAAI), 2019.

1. Kwonjoon Lee, **Weijian Xu**, Fan Fan, and Zhuowen Tu. Wasserstein Introspective Neural Networks. In *IEEE/CVF Computer Vision and Pattern Recognition* (CVPR), 2018 (**Oral**, 2.1% acceptance rate).

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| INVITED TALKS | **IBM Research Seminar**, IBM<br>Florence-2: Advancing a Unified Representation for a Variety of Vision Tasks | **2023** |
| | **CSE Research Open House**, University of California San Diego<br>Exploring Transformers in Visual Representation Learning | **2021** |
| | **Azure Cognitive Services Research**, Microsoft<br>Exploring Visual Structural Priors in Deep Representation Learning | **2021** |
| AWARDS | NeurIPS Outstanding Reviewer (Top 8%) | **2021** |
| | NeurIPS Top 10% Reviewer | **2020** |
| | GSA Travel Grant in UC San Diego | **2018** |
| | National Scholarship of China | **2015** |
| TEACHING EXPERIENCE | **Teaching Assistant**, University of California San Diego<br>CSE 252B - Computer Vision II | **Winter 2022** |
| | **Teaching Assistant**, University of California San Diego<br>CSE 152A - Introduction to Computer Vision I | **Fall 2021** |
| | **Teaching Assistant**, University of California San Diego<br>CSE 151A - Introduction to Machine Learning | **Spring 2021** |
| | **Teaching Assistant**, University of California San Diego<br>CSE 152A - Introduction to Computer Vision I | **Winter 2021** |
| | **Teaching Assistant**, University of California San Diego<br>COGS 118A - Supervised Machine Learning Algorithms | **Winter 2020** |
| | **Teaching Assistant**, University of California San Diego<br>COGS 181 - Neural Networks and Deep Learning | **Spring 2019** |
| | **Teaching Assistant**, University of California San Diego<br>COGS 118A - Introduction to Machine Learning I | **Winter 2018** |

PROFESSIONAL ACTIVITY

Conference Reviewer:

- CVPR, ICCV, ECCV, ICLR, NeurIPS, AAAI.　　　　　**2019 - 2024**

Journal Reviewer:

- TPAMI.

MISC.

Languages and Frameworks: Python, PyTorch.

Development Environment: Linux/Unix, macOS and Windows.

Fluent in English and Chinese.