

# Weijian Xu

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CONTACT INFORMATION	Microsoft One Microsoft Way Redmond, WA 98052	<i>Phone:</i> +1 (858) 888-6347 <i>E-mail:</i> weijianxu@microsoft.com <i>Website:</i> <a href="https://weijianxu.com">https://weijianxu.com</a>
RESEARCH INTERESTS	Deep learning, computer vision, and multi-modal learning	
EDUCATION	<b>University of California San Diego</b> , La Jolla, CA <i>Ph.D. in Computer Science</i> <ul style="list-style-type: none"><li>• Advisor: Prof. Zhuowen Tu</li><li>• Co-advisor: Prof. Hao Su</li></ul>	<b>2018 - 2022</b>
	<b>University of California San Diego</b> , La Jolla, CA <i>M.S. in Computer Science</i>	<b>2016 - 2018</b>
	<b>Beihang University</b> , Beijing, China <i>B.E. in Computer Science</i> <ul style="list-style-type: none"><li>• Selected into Honors College</li></ul>	<b>2012 - 2016</b>
RESEARCH EXPERIENCE	<b>Microsoft Azure AI</b> , Redmond, WA <i>Senior Researcher</i> <ul style="list-style-type: none"><li>– Member of the Microsoft GenAI / MAC research team. Focus on research and engineering for multi-modal models.</li><li>– <i>Phi-vision</i> series: Developed a highly capable multi-modal version of small language model (SLM). Focus on data efforts to enable pre-training, post-training, and evaluation.</li><li>– <i>Florence-2</i>: Developed a unified visual representation for comprehensive vision and vision-language tasks. Related work is accepted by CVPR 2024.</li></ul>	<b>2022 - Present</b>
	<b>University of California San Diego</b> , La Jolla, CA <i>Graduate Research Assistant</i> , Advisor: Prof. Zhuowen Tu <ul style="list-style-type: none"><li>– Focus on visual representation learning and apply it to a wide range of applications.</li><li>– Explored the Transformers in vision models, focusing on task decoder and backbone design. Related works are accepted by CVPR 2021 and ICCV 2021.</li><li>– Developed an attentional constellation model for few-shot image classification. This work is accepted by ICLR 2021.</li><li>– 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.</li></ul>	<b>2017 - 2022</b>
	<b>Microsoft AI - Autonomous Systems</b> , Redmond, WA <i>Research Intern</i> , Mentor: Dr. Shuang Ma Developed a Transformer-based multi-modal representation for autonomous tasks.	<b>2021</b>
	<b>Microsoft Cloud and AI</b> , Redmond, WA <i>Research Intern</i> , Mentor: Dr. Baoyuan Wang Developed a self-supervised face representation learning framework for detection, tracking and other downstream tasks.	<b>2020</b>

**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).

INVITED TALKS	<b>IBM Research Seminar</b> , IBM Florence-2: Advancing a Unified Representation for a Variety of Vision Tasks	<b>2023</b>
	<b>CSE Research Open House</b> , University of California San Diego Exploring Transformers in Visual Representation Learning	<b>2021</b>
	<b>Azure Cognitive Services Research</b> , Microsoft Exploring Visual Structural Priors in Deep Representation Learning	<b>2021</b>
AWARDS	NeurIPS Outstanding Reviewer (Top 8%)	<b>2021</b>
	NeurIPS Top 10% Reviewer	<b>2020</b>
	GSA Travel Grant in UC San Diego	<b>2018</b>
	National Scholarship of China	<b>2015</b>
TEACHING EXPERIENCE	<b>Teaching Assistant</b> , University of California San Diego CSE 252B - Computer Vision II	<b>Winter 2022</b>
	<b>Teaching Assistant</b> , University of California San Diego CSE 152A - Introduction to Computer Vision I	<b>Fall 2021</b>
	<b>Teaching Assistant</b> , University of California San Diego CSE 151A - Introduction to Machine Learning	<b>Spring 2021</b>
	<b>Teaching Assistant</b> , University of California San Diego CSE 152A - Introduction to Computer Vision I	<b>Winter 2021</b>
	<b>Teaching Assistant</b> , University of California San Diego COGS 118A - Supervised Machine Learning Algorithms	<b>Winter 2020</b>
	<b>Teaching Assistant</b> , University of California San Diego COGS 181 - Neural Networks and Deep Learning	<b>Spring 2019</b>
	<b>Teaching Assistant</b> , University of California San Diego COGS 118A - Introduction to Machine Learning I	<b>Winter 2018</b>
PROFESSIONAL ACTIVITY	Conference Reviewer: <ul style="list-style-type: none"> <li>• CVPR, ICCV, ECCV, ICLR, NeurIPS, AAAI.</li> </ul>	<b>2019 - Present</b>
	Journal Reviewer: <ul style="list-style-type: none"> <li>• TPAMI.</li> </ul>	
MISC.	Languages and Frameworks: Python, PyTorch. Development Environment: Linux/Unix, macOS and Windows. Fluent in English and Chinese.	