Xiangyun Zhao

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Education

2017 –   **Northwestern University,** Evanston, IL.

Ph.D. in Electrical and Computer Engineering

Advisor: Prof. Ying Wu

GPA: 3.95/4.00.

2014 – 2016   **University of California San Diego,** San Diego, CA.

M.S. in Electrical and Computer Engineering

2010 – 2014   **University of Electronic Science and Technology of China,** Chengdu, China.

B.Eng. in Electrical Information Engineering

GPA: 3.91/4.00. **Rank**: TOP 3%.

Research Statement

My research interest includes computer vision and machine learning. Specifically, my research aims to address the data insufficiency issue in large-scale visual recognition. One part of my research is focused on modeling the relationship between categories. It includes relevance, semantic, and joint visual-semantic relationship. The other part of my research is focused on directly handling this issue. I try to train a model using multiple datasets or design an efficient algorithm to train the model with a limited number of annotated data.

Research Experiences

Sep. 2017 -   **Computational Vision Lab,** Northwestern University.   Advisor: Prof. Ying Wu

Large Scale Object Detection with Insufficient Data. My research is focused on modeling the relationship between categories so that the detector can detect the novel categories with a few samples and without extra training.

June 2020 - Feb. 2021   **Google Research** Mentors: Raviteja Vemulapalli, Boqing Gong, Philip Mansfield

Worked on training an efficient model with only limited labeled data for semantic segmentation. We proposed a new supervised pixel-wise pretraining algorithm to significantly improve the performance when the training data is limited.

June 2019 - Sep. 2019	**NEC Labs America** Mentors: Samuel Schulter, Gaurav Sharma, Yi-hsuan Tsai, Manmohan Chandraker

Worked on training a detection model with unified label space using multiple datasets. To detect the categories which are annotated in different datasets, we present an effective pseudo-labeling algorithm to train a unified detector.

June 2018 - Sep. 2018	**Baidu Research U.S.A.** Mentors: Feng Zhou, Yi Yang

Worked on part attribute recognition. We propose to model the semantic relationship between part attributes to utilize the attributes with sufficient data to help attributes with insufficient data.

June 2017 - Dec. 2017	**Adobe Research** Mentors: Haoxiang Li, Xiaohui Shen

Worked on multi-task learning and image retrieval. Explored an effective multi-task learning technique to solve the problem that tasks may compete or even distract each other during joint training.

Apr. 2016 - Dec. 2016	**Visual Computing Group,** Microsoft Research Asia. Mentor: Yichen Wei.

Worked on object detection and instance segmentation. Explored to utilize the weakly supervised instance segmentation to improve object detection with only bounding box annotation.

Oct. 2015 - Apr. 2016	**360 AI Institute,** Qihoo 360. Advisor: Prof. Shuicheng Yan

Worked on face recognition and facial expression recognition. By modeling the relationship between peak and weak expressions, we present an effective algorithm to improve the weak expression recognition. This algorithm is also successfully applied to improve profile face recognition.

Oct. 2014 - Feb. 2015	**Prof. Cosman's Group,** University of California, San Diego. Advisor: Prof. Pamela Cosman

Worked on image processing and enhancement. Proposed a novel algorithm for underwater image dehaze. **Our work is published in ICIP 2015 and won the top 10% paper award**

Publications and/or Submitted Manuscripts

Xiangyun Zhao, Ying Wu, **Title is undisclosed due to anonymous submission.**

Submitted to *the Thirty-fifth Conference on Neural Information Processing Systems (NeuIPS), 2021*.

Xiangyun Zhao, Xu Zou, Ying Wu, **Morphable Detector for Object Detection on Demand.**

To appear in *the IEEE International Conference on Conference on Computer Vision (ICCV), 2021*.

Xiangyun Zhao, Raviteja Vemulapalli, Philip Mansfield, Boqing Gong, Bradley Green, Lior Shapira, Ying Wu, **Contrastive Learning for Label-Efficient Semantic Segmentation.**

To appear in *the IEEE International Conference on Conference on Computer Vision (ICCV), 2021*.

Xiangyun Zhao, Samuel Schulter, Gaurav Sharma, Yi-Hsuan Tsai, Manmohan Chandraker, and Ying Wu, **Object Detection with a Unified Label Space from Multiple Datasets.**

Published in *the 16th European Conference on Computer Vision (ECCV), 2020.*

Xiangyun Zhao, Yi Yang, Feng Zhou, Xiao Tan, Yuchen Yuan, Yingze Bao and Ying Wu, **Recognizing Part Attributes with Insufficient Data.**

Published in *the IEEE International Conference on Conference on Computer Vision (ICCV), 2019.*

Xu Zou, Sheng Zhong, Yuxin Yan, **Xiangyun Zhao**, Jiahuan Zhou, Ying Wu, **Learning Robust Facial Landmark Detection via Hierarchical Structured Ensemble.**

Published in *the IEEE International Conference on Conference on Computer Vision(ICCV), 2019*.

Xiangyun Zhao , Haoxiang Li, Xiaohui Shen, Xiaodan Liang and Ying Wu, **A Modulation Module for Multi-task Learning with Application in Image Retrieval.**

Published in *the 15th European Conference on Computer Vision (ECCV), 2018*.

Xiangyun Zhao, Shuang Liang and Yichen Wei, **Pseudo-Mask Augmented Object Detection.**

Published in *the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018*.

Xiangyun Zhao , Xiaodan Liang, Luoqi Liu, Teng Li, Yugang Han, Nuno Vasconcelos and Shuicheng Yan, **Peak Piloted Deep Network for Expression Recognition.**

Published in *the 14th European Conference on Computer Vision (ECCV), 2016*.

Yan-Tsung Peng, **Xiangyun Zhao** and Pamela Cosman, **Single underwater image enhancement using depth estimation based on blurriness. (Top 10% paper award)**

Published in *IEEE International Conference on Image Processing, ICIP, 2015*

Patents

Performing attribute-aware based tasks via an attention-controlled neural network (US 2019/0258925 A1)

Object detection with training from multiple datasets (US 2021/0150275 A1)

Reviewer

Conference CVPR 2019-2021, ECCV 2018, 2020, ICCV 2019, 2021, ICLR 2022, AAAI 2020-2021, ICPR 2020, WACV 2020-2021, BMVC 2019-2020

Journal IEEE Transactions on Pattern Analysis and Machine Intelligence(T-PAMI), IEEE Transactions on Image Processing(TIP)

Honors and Awards

Supported University Collaborations Funding by Adobe

Northwestern Ph.D. Fellowship by Northwestern University.

Top 10% Paper Award by ICIP 2015

Excellent Graduate Student for studying abroad by UESTC

1st Class Scholarship for Academic Excellence(5%) by UESTC

References

Ying Wu Professor at ECE Department, Northwestern University

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Shuicheng Yan Assotiate Professor at ECE Department, National University of Singapore

Email: eleyans@nus.edu.sg

Yi Yang Senior Research Scientist, DeepMind

Email: yiya@google.com

Raviteja Vemulapalli Senior Research Scientist, Google Research

Email: ravitejavemu@google.com

Shuicheng Yan Assotiate Professor at ECE Department, National University of Singapore

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