Zhenlin Xu

zhenlinx@cs.unc.edu · 585-351-9360 · wildphoton.github.io · zhenlinxu · wildphoton

Summary

My research focuses on data efficient, robust and generalizable deep representation learning for computer vision, including self/semi-supervised learning, domain generalization, and compositional generalization.

Education

University of North Carolina at Chapel Hill, Chapel Hill, NC, USA — Expected May 2022
Ph.D. in Computer Science — Advisor: Marc Niethammer, Colin Raffel

Rochester Institute of Technology (RIT), Rochester, NY, USA — 2016
M.S. in Imaging Science — Advisor: Nathan Cahill

Xi'an Jiaotong University, Xi'an, Shaanxi, China — 2014
B.S. in Optical Information Science and Technology at Department of Physics

Work Experience

Google, Mountain View, CA (Remote) — 05/2021 – 12/2021
Research Intern / Student Researcher — Host: Marya Khademi, Simon Knornblith, Ting Chen, Dilip Krishnan
Self-supervised visual representation learning for images in the wild.

Nvidia, Santa Clara, CA (Remote) — 05/2020 – 08/2020
Research Intern — Mentor: Andriy Myronenko, Daguang Xu
Federated learning with knowledge distillation for non-iid image data

UNC Chapel Hill, Chapel Hill, NC — 08/2017 - 05/2020
Graduate Research Assistant — Advisor: Marc Niethammer

- Generalized and transferable visual representation learning [1].
- Image registration and segmentation [6, 7]; semi-supervised learning and multi-task learning [5, 3, 2, 4].

Siemens Healthineers, Pricenton, NJ — 05/2019 – 08/2019
Research Intern — Mentor: Eli Gibson, Siqi Liu, Sasa Grbic
Developed domain adaptation/generalization approaches for semantic segmentation

Duke University Energy Initiative, Durham, NC — 06/2017 – 08/2017
Research Intern at Energy Data Analytics Lab — Mentor: Kyle Bradbury
Research on deep learning based semantic segmentation for remote sensing images.

Rochester Institute of Technology, Rochester, NY — 09/2015 - 08/2016
Graduate Research Assistant — Advisor: Nathan Cahill
Medical images and remote-sensing image analysis [8]

University of Rochester, Rochester, NY — 06/2015 - 08/2015
Research Intern at the Center for Visual Science — Mentor: Jesse Schallek
Developed an algorithm for counting blood cells in scanning light ophthalmoscopy (retinal) images.

Honors and Awards

Royster Society of Fellows Dissertation Completion Fellowship	2021
RIT Graduate Scholarship of Imaging Science (Full tuition and stipend)	2014 - 2016
XJTU Outstanding Graduates	2014
XJTU Outstanding Students & Undergrad Scholarship	2010 - 2013

Skills

- Programming Languages: Python, MATLAB, C++
- ML/CV Packages: PyTorch, Tensorflow(TPU), OpenCV, ITK, scikit-learn

Teaching Experience

Models of Languages and Computation, *Teaching Assistant* , UNC Chapel Hill	2020 Fall, 2021 Spring
Algorithms, *Teaching Assistant* , UNC Chapel Hill	2016 Fall, 2017 Spring
Fourier Methods for Imaging, *Teaching Assistant*, RIT	2015 Spring
Geometry Optics, *Teaching Assistant*, RIT	2014 Fall

Academic Service

Reviewer: MICCAI, AAAI, ICCV, NeurIPS, ICLR, Medical Image Analysis, TPAMI

Publications

[1] Zhenlin Xu, Deyi Liu, Junlin Yang, Colin Raffel, and Marc Niethammer. Robust and generalizable visual representation learning via random convolutions. *The International Conference on Learning Representations (ICLR)*, 2021.

[2] Zhengyang Shen, Zhenlin Xu, Sahin Olut, and Marc Niethammer. Anatomical data augmentation via fluid-based image registration. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2020.

[3] Sahin Olut, Zhengyang Shen, Zhenlin Xu, Samuel Gerber, and Marc Niethammer. Adversarial data augmentation via deformation statistics. *European Conference on Computer Vision (ECCV)*, 2020.

[4] Xu Han, Zhengyang Shen, Zhenlin Xu, Spyridon Bakas, Hamed Akbari, Michel Bilello, Christos Davatzikos, and Marc Niethammer. A deep network for joint registration and reconstruction of images with pathologies. In *International Workshop on Machine Learning in Medical Imaging*, pages 342–352. Springer, 2020.

[5] Zhenlin Xu and Marc Niethammer. DeepAtlas: Joint Semi-Supervised Learning of Image Registration and Segmentation. In *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2019.

[6] Zhengyang Shen, Xu Han, Zhenlin Xu, and Marc Niethammer. Networks for joint affine and non-parametric image registration. In *Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 4224–4233, 2019.

[7] Zhenlin Xu, Zhengyang Shen, and Marc Niethammer. Contextual additive networks to efficiently boost 3d image segmentations. In *Deep Learning in Medical Image Analysis Workshop on MICCAI 2018*, pages 92–100. Springer, 2018.

[8] Xuewen Zhang, Selene E Chew, Zhenlin Xu, and Nathan D Cahill. Slic superpixels for efficient graph-based dimensionality reduction of hyperspectral imagery. In *Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXI*, volume 9472, page 947209. International Society for Optics and Photonics, 2015.

[9] Zhenlin Xu, Tao Zhu, Di Cheng, Junling Long, Ziwei Huang, Ruifeng Liu, Pei Zhang, Hong Gao, and Fuli Li. Accurate and practical method for characterizing laguerre–gaussian modes. *Applied Optics*, 53(8):1644–1647, 2014.