

# YU ZHANG

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PERSONAL INFORMATION	Ph.D. Candidate (ABD) Department of Computer Science University of Kentucky 329 Rose Street, Lexington, KY 40506 USA	Homepage : <a href="http://yuzhang03.github.io">yuzhang03.github.io</a> Phone : +1(859)420-1076 Email : <a href="mailto:y.zhang@uky.edu">y.zhang@uky.edu</a>
EDUCATION	<b>University of Kentucky</b> Ph.D. in Computer Science Advisor : Nathan Jacobs GPA : 3.89/4.00	Aug. 2017 - Present
	<b>Northeastern University (CN)</b> School of Computer Science and Engineering B.E. in Telecommunications	Sept. 2013 - June 2017
SKILLS	<b>Experience</b> : Deep Learning, Machine Learning, Computer Vision, Unsupervised Domain Adaptation, Weakly Supervised Learning, Unsupervised Learning, Adversarial Attacks, Point Clouds, Astrophysics Data Analysis, Medical Image Analysis <b>Programming</b> : Python, PyTorch, MATLAB, C, C++, Shell, SQL	
PROFESSIONAL EXPERIENCE	<b>Research Assistant</b> , University of Kentucky, Lexington, KY <ul style="list-style-type: none"><li>Developed data augmentation, weakly supervised learning, network calibration, and adversarial attack methods on multiple datasets.</li><li>Applied deep learning on unbalanced astrophysics data to explore the relations between galaxy cluster images and magnetic field, mass, and cooling time.</li><li>Classification, detection, and segmentation on 2D and 3D medical images.</li></ul>	Summer 2019 - Present
	<b>Teaching Assistant</b> , University of Kentucky, Lexington, KY <ul style="list-style-type: none"><li>CS216 : Introduction to Software Engineering Techniques</li><li>CS215 : Introduction to Program Design, Abstraction and Problem Solving</li><li>CS371 : Introduction to Computer Networking</li></ul>	Fall 2018, Fall 2019 Spring 2019 Spring 2018
MANUSCRIPTS	<ol style="list-style-type: none"><li>Gongbo Liang, Connor Greenwell, <b>Yu Zhang</b>, Xiaoqin Wang, Ramakanth Kavuluru, Nathan Jacobs. "Weakly-Supervised Feature Learning Using a Text and Image Matching Network for Medical Image Analysis". <a href="https://arxiv.org/abs/2010.03060">arXiv:2010.03060</a></li><li>Usman Rafique, <b>Yu Zhang</b>, Benjamin Brodie, Nathan Jacobs. "Unifying Guided and Unguided Outdoor Image Synthesis". Submitted to <i>IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2020.</li></ol>	
JOURNAL PUBLICATIONS	<ol style="list-style-type: none"><li>Y. Su, <b>Yu Zhang</b>, G. Liang, J. A. ZuHone, D. J. Barnes, N. B. Jacobs, M. Ntampaka, W. R. Forman, R. P. Kraft, P. E. J. Nulsen, C. Jones, E. Roediger. "A deep learning view of the census of galaxy clusters in IllustrisTNG". In <i>Monthly Notices of the Royal Astronomical Society (MNRAS)</i>, 2020. <a href="https://arxiv.org/abs/2007.05144">arXiv:2007.05144</a></li><li>Xiaoqin Wang, Gongbo Liang, <b>Yu Zhang</b>, Hunter Blanton, Zachary Bessinger, Nathan Jacobs. "Inconsistent Performance of Deep Learning Models on Mammogram Classification". In <i>Journal of the American College of Radiology (JACR)</i>, 2020.</li></ol>	
CONFERENCE PUBLICATIONS	<ol style="list-style-type: none"><li><b>Yu Zhang</b>, Gongbo Liang, Yuanyuan Su, Nathan Jacobs. "Multi-Branch Attention Networks for Classifying Galaxy Clusters". In <i>International Conference on Pattern Recognition (ICPR)</i>, 2020.</li><li>Gongbo Liang, <b>Yu Zhang</b>, Xiaoqin Wang, Nathan Jacobs. "Improved Trainable Calibration Method for Neural Networks on Medical Imaging Classification". In <i>British Machine Vision Conference (BMVC)</i>, 2020. <a href="https://arxiv.org/abs/2009.04057">arxiv:2009.04057</a></li></ol>	

7. Gongbo Liang, Xiaoqin Wang, **Yu Zhang**, Nathan Jacobs. “Weakly-Supervised Self-Training for Breast Cancer Localization”. In *Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2020.
8. **Yu Zhang**, Xiaoqin Wang, Hunter Blanton, Gongbo Liang, Xin Xing, Nathan Jacobs. “2D Convolutional Neural Networks for 3D Digital Breast Tomosynthesis Classification”. In *IEEE International Conference of Bioinformatics and Biomedicine (BIBM)*, 2019. [arXiv:2002.12314](#)
9. Gongbo Liang, Xiaoqin Wang, **Yu Zhang**, Xin Xing, Hunter Blanton, Tawfiq Salem, Nathan Jacobs. “Joint 2D-3D Breast Cancer Classification”. In *IEEE International Conference of Bioinformatics and Biomedicine (BIBM)*, 2019. [arXiv:2002.12392](#)

WORKSHOP  
PUBLICATIONS

10. Gongbo Liang, Sheng-Chieh Lin, **Yu Zhang**, Yuanyuan Su, Nathan Jacobs. “Optical Wavelength Guided Self-Supervised Feature Learning For Galaxy Cluster Richness Estimate”. In *Conference on Neural Information Processing Systems (NeurIPS) Workshop : Machine Learning and Physical Sciences*, 2020.
11. Gongbo Liang, **Yu Zhang**, Nathan Jacobs. “Neural Network Calibration for Medical Imaging Classification Using DCA Regularization”. In *International Conference on Machine Learning (ICML) Workshop : Uncertainty and Robustness in Deep Learning*, 2020.
12. **Yu Zhang**, Gongbo Liang, Tawfiq Salem, Nathan Jacobs. “Defense-PointNet : Protecting PointNet Against Adversarial Attacks”. In *IEEE International Conference on Big Data (BigData) Workshop : The Next Frontier of Big Data From LiDAR*, 2019. [arXiv:2002.11881](#)

ABSTRACTS

13. Gongbo Liang, **Yu Zhang**, Jinze Liu, Nathan Jacobs, Xiaoqin Wang. “Training Deep Learning Models as Radiologists : Breast Cancer Classification Using Combined Whole 2D Mammography and Full Volume Digital Breast Tomosynthesis”. In *Radiological Society of North America 105th Scientific Assembly and Annual Meeting (RSNA)*, 2019.
14. **Yu Zhang**, Gongbo Liang, Nathan Jacobs, Xiaoqin Wang. “Unsupervised Domain Adaptation for Mammogram Image Classification : A Promising Tool for Model Generalization”. In *Conference on Machine Intelligence in Medical Imaging (C-MIMI)*, 2019. [arXiv:2003.01111](#)

TALKS

- “Defense-PointNet : Protecting PointNet Against Adversarial Attacks”, Dec. 2019, IEEE BigData LiDAR Workshop, Los Angeles, CA
- “Unsupervised Domain Adaptation for Mammogram Image Classification : A Promising Tool for Model Generalization”, Sep. 2019, C-MIMI, Austin, TX

AWARDS

- Conference Travel Grant, University of Kentucky, 2019
- ATS Fellowship, University of Kentucky, 2017-2018

SERVICE

- Reviewing for IEEE Winter Conference on Applications of Computer Vision (WACV 2020)
- Reviewing for The British Machine Vision Conference (BMVC 2020)

MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE), Student Member
- Society for Imaging Informatics in Medicine (SIIM), Student Member