

Yi Zheng

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Research Interests

Expertise: Computer Vision and Representation Learning.

Education

Boston University

Ph.D. Candidate in Computer Science, Image Video Computing, GPA 3.93/4.0

Advisor: Prof. Margrit Betke and Prof. Vijaya B. Kolachalama

Boston, MA

Expected: Spring 2024

University of Southern California

M.S. in Electrical Engineering, GPA 3.95/4.0

Los Angeles, CA

2016

Shandong University

B.S. in Electrical Engineering, GPA 3.90/4.0

Shandong, China

2014

Research Experience

Computer Vision in High-Resolution Representation Learning for Digital Pathology

- **Y. Zheng**, R. D. Conrad, E. J. Green, E. J. Burks, M. Betke, J. E. Beane, V. B. Kolachalama, "Graph attention-based fusion of pathology images and gene expression for prediction of cancer survival," *IEEE Transactions on Medical Imaging (TMI)*, 2024. (Accepted and In Press)
- **Y. Zheng**, H. Sharma, M. Betke, J. E. Beane, V. B. Kolachalama, "FourierMIL: Fourier filtering-based multiple instance learning for whole slide image analysis," *European Conference on Computer Vision (ECCV)*, 2024. (Under review)
- R. Gindra, **Y. Zheng**, D. Venkatraman, R. Conrad, E. Green, S. Mazzilli, E. Billatos, M. Reid, E. Burks, V. B. Kolachalama, J. E. Beane "Graph perceiver network for lung tumor and bronchial premalignant lesion stratification from histopathology," *The American Journal of Pathology (AJP)*, 2024. (Article in Press)
- **Y. Zheng**, R. Gindra, M. Betke, J. E. Beane, V. B. Kolachalama, "A deep learning-based graph-transformer for whole slide image classification," *IEEE Transactions on Medical Imaging (TMI)*, 2022 Nov;41(11):3003-3015.
- **Y. Zheng**, C. A. Cassol, S. Jung, D. Veerapaneni, V. C. Chitalia, K.Y.M. Ren, S. S. Bellur, P. Boor, L. M. Barisoni, S.S. Waikar, M. Betke, and V. B. Kolachalama, "Deep-learning-driven quantification of interstitial fibrosis in digitized kidney biopsies," *The American Journal of Pathology (AJP)*, 2021 Aug;191(8):1442-1453.

Computer Vision in Scene Text Recognition and Detection via Multimodalities

- **Y. Zheng**, Q. Wang, and M. Betke, "Semantic-Based Sentence Recognition in Images Using Bimodal Deep Learning," *IEEE International Conference on Image Processing (ICIP)*, 2021.
- **Y. Zheng**, W. Qin, D. Wijaya, and M. Betke, "LAL: Linguistically aware learning for scene text recognition," in *Proc. ACM International Conference on Multimedia (ACM MM)*, 2020.
- Q. Wang, **Y. Zheng**, and M. Betke, "A method for detecting text of arbitrary shapes in natural scenes that improves text spotting," In *Proc. CVPR Workshop*, 2020.

Computer Vision in Social Media

- M. Jalal, K. Wang, S. Jefferson, **Y. Zheng**, E. O. Nsoesie, M. Betke, "Scraping social media photos posted in Kenya and elsewhere to detect and analyze food types," *Proceedings of the 5th International Workshop on Multimedia Assisted Dietary Management*, 2019

Work Experience

Healthcare Co., General Electric (GE)

Image Quality Engineer, Full-time

Developed the Image-based Collimator Edge Detection (ICED) algorithm which automatically detects collimator edges in x-ray images.

Beijing, China

2016-2017

Brisky, UAV Developer

Software Engineer, Intern

Worked on enhancing UAV image stability and navigation.

Los Angeles, CA

Summer 2015

Rehabilitation Engineering Labs

Software Engineer, Intern

Assisted in the development of the Mammary Therapeutic Apparatus.

Jinan, China

Summer 2013 and 2014

Honors and Awards

Computer Science Research Excellence Award (REA), Boston University, 2022.

Masters Honors Fellowship, University of Southern California, 2015.

First-class Scholarship Winner, Shandong University, 2011-2014.

Professional and Teaching Activities

Reviewer/Program Committee for IEEE Access, PETRA, IJIG in 2021, and CVPR, ICCV, Nature Communications in 2022.

Academic Talks:

Computational Biomedicine Seminar, Department of Medicine, Boston University.

1. "A visual-language model for biomarker segmentation," 2024.
2. "Context-aware survival prediction using patch-based graphmixer networks," 2023.
3. "A deep learning based graph-transformer for whole slide image classification," 2023.
4. "A representation learning approach for whole slide image analysis," 2021.

Artificial Intelligence Research (AIR) Seminar, Department of Computer Science, Boston University.

1. "Multimodal Learning for Scene Text Recognition," 2021.

Teaching:

BU CS 640 Artificial Intelligence(Graduate course in artificial intelligence): by Professor Margrit Betke, Leading Teaching Assistant, Fall 2017 and Fall 2018.

BU CS 132 Linear Algebra (Introductory course in computer science): by Professor Abbas Attarwala, Leading Teaching Assistant, Spring 2018 and Spring 2019.

Technical Skills

Proficiency in Python and C, with extensive experience in deep learning libraries such as PyTorch and TensorFlow.