Yi Zheng

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Research Interests

Expertise: Deep Learning and Computer Vision.

Education

Boston University — **Boston, MA**
Ph.D. in Computer Science, GPA 3.93/4.0 — *2024*
Advisor: Prof. Margrit Betke and Prof. Vijaya B. Kolachalama

University of Southern California — **Los Angeles, CA**
M.S. in Electrical Engineering, GPA 3.95/4.0 — *2016*

Shandong Normal University — **Jinan, China**
B.S. in Electrical Engineering, GPA 3.90/4.0 — *2014*

Publications

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.
- **Y. Zheng,** H. Sharma, M. Betke, J. E. Beane, V. B. Kolachalama, “FourierMIL: Fourier filtering-based multiple instance learning for whole slide image analysis,” IEEE Transactions on Medical Imaging (TMI), 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.
- **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.
- **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.

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

THALES USA, INC. — **Pasadena, CA**
Biometrics Deep Learning Scientist, Full-time — *2024-now*
Applied machine learning and deep learning techniques to develop algorithms for biometric applications, including fingerprint matching and face recognition.

Healthcare Co., General Electric (GE) — **Beijing, China**
Image Quality Engineer, Full-time — *2016-2017*

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

Brisky, UAV Developer **Los Angeles, CA**
Software Engineer, Intern *Summer 2015*
Worked on enhancing UAV image stability and navigation.

Rehabilitation Engineering Labs **Jinan, China**
Software Engineer, Intern *Summer 2013 and 2014*
Assisted in the development of the Mammary Therapeutic Apparatus.

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.

AcademicTalks:
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.