

# Yi Zheng

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## Research Interests

Computer Vision, Representation Learning, Visual Object Classification, and Machine Learning.

## Education

### Boston University

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

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

**Boston, MA**

*Expected: Spring 2023*

### University of Southern California

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

**Los Angeles, CA**

*2016*

### Shandong University

*B.A., Electrical Engineering, GPA 3.90/4.0*

**Shandong, China**

*2014*

## Research Experiences

### Computer Vision in High-Resolution Representation Learning for Digital Pathology

- **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.
- R. Gindra, **Yi Zheng**, D. Venkatraman, R. Conrad, E. Green, S. Mazzilli, E. Billatos, M. Reid, E. Burks, V. B. Kolachalama, J. E. Beane "Histological profiling of lung premalignant lesions and tumors using graph convolutional networks," *NCI Informatics Technology for Cancer Research (ITCR)*, 2022.
- L. Claus, Yi Zhang, **Y. Zheng**, T. Surendan, V. Chitalia, P. Walker, C. Cassol, V. B. Kolachalama. "Computational assessment of early diabetic nephropathy" (under review)

### 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

*Collaboration with BU IVC Interns*

- 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

### Deep Learning for tissue phenotyping in computational biomedicine

Researcher

**Kolachalama Labs**

*2020-present*

- Built clinical-grade software tools to complement the pathologist workflow. Constructed efficient neural models on high resolution data to process local and contextual information.

## Work Experiences

### Healthcare Co., General Electric (GE)

*Image Quality Engineer, Full-time*

**Beijing, China**

*2016-2017*

Designed and implemented the Image-based Collimator Edge Detection (ICED) algorithm, which automatically detects collimator edges in x-ray images. (Programming with C and Matlab)

## **Brisky, UAV Developer**

*Software Engineer, Intern*

Designed anti-shake and anti-distortion functions of UAV aerial images. Enhanced visual navigation, positioning, and automatic obstacle avoidance algorithms. (Programming with C and Python)

**Los Angeles, CA**

*Summer 2015*

## **Rehabilitation Engineering Labs**

*Software Engineer, Intern*

Drafted circuit diagrams using Altium Designer. Performed in silico function tests and finalized the design. Assembled and evaluated the Mammary Therapeutic Apparatus. (Programming with C)

**Jinan, China**

*Summer 2013 and 2014*

## **Honors and Awards**

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2022: Computer Science Research Excellence Award (REA), Boston University. (*total two award recipients*)

2015: Masters Honors Fellowship, University of Southern California.

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

## **Professional and Teaching Activities**

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

### **Academic Talks:**

1. "A representation learning approach for whole slide image analysis," in Computational Biomedicine Seminar at BU.
2. "Multimodal Learning for Scene Text Recognition," in Artificial Intelligence Research (AIR) Seminar at BU.

### **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**

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**Programming:** Python, also comfortable with C.

**Deep Learning Libraries:** PyTorch and TensorFlow. Experienced in various machine learning theories and techniques.