Kang Zheng, Ph.D.

Senior Research Scientist, PAII Inc.

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Education

University of South Carolina, Columbia, SC, USA — Aug. 2012 – Aug. 2019
Ph.D. in Computer Science and Engineering

Harbin Institute of Technology, Harbin, Heilongjiang, China — Aug. 2008 – Jul. 2012
B.E. in Electrical Engineering

Experiences

PAII Inc. — Bethesda, MD, USA
Senior Research Scientist — Aug. 2019 –

PAII Inc. — Bethesda, MD, USA
Research Intern — Feb. – Jun. 2019

HERE North America — Chicago, IL, USA
Research Intern — Jul. – Oct. 2017

Research Interests
Computer vision, Deep learning
Medical image analysis

Full-length Publications

F. Wang, **K. Zheng**, L. Lu, J. Xiao, M. Wu, S. Miao: "*Automatic Vertebra Localization and Identification in CT by Spine Rectification and Anatomically-constrained Optimization*", CVPR 2021.

Y. Wang, **K. Zheng**, C-T Chang, X-Y Zhou, Z. Zheng, L. Huang, J. Xiao, L. Lu, C-H Liao, S. Miao: "*Knowledge Distillation with Adaptive Asymmetric Label Sharpening for Semi-supervised Fracture Detection in Chest X-rays*", IPMI 2021.

S. Song, Z. Miao, H. Yu, J. Fang, **K. Zheng**, C. Ma, S. Wang: "*Deep Domain Adaptation Based Multi-spectral Salient Object Detection*", IEEE Transactions on Multimedia 2021.

Y. Lu, **K. Zheng**, W. Li, Y. Wang, A. Harrison, C. Lin, S. Wang, J. Xiao, L. Lu, CF. Kuo, S. Miao: "*Contour Transformer Network for One-shot Segmentation of Anatomical Structures*", IEEE Transactions on Medical Imaging 2020.

W. Li, Y. Lu, **K. Zheng**, H. Liao, C. Lin, J. Luo, CT Cheng, J. Xiao, L. Lu, CF Kuo, S. Miao: "*Structured Landmark Detection via Topology-Adapting Deep Graph Learning*", ECCV, 2020.

H. Chen, Y. Wang, **K. Zheng**, W. Li, CT Cheng, A. Harrison, J. Xiao, G. Hager, L. Lu, C. Liao, S. Miao: "*Anatomy-Aware Siamese Network: Exploiting Semantic Asymmetry for Accurate Pelvic Fracture Detection*", ECCV, 2020.

Y. Lu, W. Li, **K. Zheng**, Y. Wang, A. Harrison, C. Lin, J. Xiao, L. Lu, S. Wang, CF. Kuo, S. Miao: "*Learning to Segment Anatomical Structures Accurately from One Exemplar*", MICCAI, 2020.

H. Yu, **K. Zheng**, J. Fang, H. Guo, S. Wang. "*A New Method and Benchmark for Detecting Co-Saliency within a Single Image*", IEEE Transactions on Multimedia, 2020.

Y. Mi, **K. Zheng**, S. Wang. "*Homography Estimation along Short Videos by Recurrent Convolutional Regression Network*", Mathematical Foundations of Computing, 2020.

S. Song, H. Yu, Z. Miao, J. Fang, K. Zheng, C. Ma, S. Wang. "*Multi-spectral Salient Object Detection by Adversarial Domain Adaptation*", AAAI, 2020.

D. Guo, Y. Pei, **K. Zheng**, H. Yu, Y. Lu, S. Wang: "*Degraded Image Semantic Segmentation with Dense-Gram Networks*", IEEE Transactions on Image Processing, 2019.

H. Guo, **K. Zheng**, X. Fan, H. Yu, S. Wang: "*Visual Attention Consistency under Image Transforms for Multi-Label Image Classification*", CVPR, 2019.

G. Liang, X. Lan, X. Chen, **K. Zheng**, S. Wang, N. Zheng. "*Cross-View Person Identification based on Confidence-Weighted Human Pose Matching*, IEEE Transactions on Image Processing, 2019.

Y. Mi, **K. Zheng**, S. Wang: "*Recognizing Actions in Wearable-Camera Videos by Training Classifiers on Fixed-Camera Videos*", ICMR, 2018.

G. Liang, X. Lan, **K. Zheng**, S. Wang, N. Zheng: "*Cross-View Person Identification by Matching Human Poses Estimated with Confidence on Each Body Joint*", AAAI, 2018.

H. Yu, **K. Zheng**, J. Fang, H. Guo, W. Feng, S. Wang: "*Co-Saliency Detection within a Single Image*", AAAI, 2018.

K. Zheng, X. Fan, Y. Lin, H. Guo, H. Yu, D. Guo, S. Wang: "*Learning View-Invariant Features for Person Identification in Temporally Synchronized Videos Taken by Wearable Cameras*", ICCV, 2017.

D. Guo, **K. Zheng**, S. Wang: "*Lesion Detection Using T1-Weighted MRI: A New Approach Based on Functional Cortical ROIs*", ICIP, 2017.

K. Zheng, H. Guo, X. Fan, H. Yu, S. Wang: "*Identifying Same Persons from Temporally Synchronized Videos Taken by Multiple Wearable Cameras*", CVPR Workshop, 2016.

D. Guo, J. Fridriksson, P. Fillmore, C. Rorden, H. Yu, **K. Zheng**, S. Wang: "*Automated lesion detection on MRI scans using combined unsupervised and supervised methods*", BMC Medical Imaging, 2015.

X. Fan, **K. Zheng**, Y. Lin, S. Wang: "*Combining Local Appearance and Holistic View: Dual-Source Deep Neural Networks for Human Pose Estimation*", CVPR, 2015.

D. Salvi, **K. Zheng**, Y. Zhou, S. Wang: "*Distance Transform Based Active Contour Approach for Document Image Rectification*", WACV, 2015.

K. Zheng*, Y. Lin*, Y. Zhou, D. Salvi, X. Fan, D. Guo, Z. Meng, S. Wang: "*Video-based Action Detection using Multiple Wearable Cameras*", ECCV Workshop, 2014.

X. Fan, **K. Zheng**, Y. Zhou, S. Wang: "*Pose Locality Constrained Representation for 3D Human Pose Reconstruction*", ECCV, 2014.

Clinical Abstracts

K. Zheng, Y. Wang, L. Lu, C. Hsieh, C. Kuo, S. Miao: "*Consistent and Coherent Computer-Aided Knee Osteoarthritis Assessment from Plain Radiographs*", RSNA 2020.

C. Kuo, S. Miao, **K. Zheng**, L. Lu, C. Hsieh, C. Lin, T Fan: "*Prediction of low bone mineral density and FRAX score by assessing hip bone texture with deep learning*", EULAR 2020.

C. Kuo, **K. Zheng**, S. Miao, L. Lu, C. Hsieh, C. Lin, T. Fan: "*Predictive value of bone texture features extracted by deep learning models for the detection of osteoarthritis: data from the Osteoarthritis Initiative*", EULAR 2020.

C. Kuo, S. Miao, **K. Zheng**, C. Hsieh, L. Lu, C. Lin: "*Bone texture analysis with deep learning in hand radiographs for assessing the risk of rheumatoid arthritis*", EULAR 2020.

Patent Applications

X. Zhou, Y. Wang, **K. Zheng**, L. Lu, A. P. Harrison, S. Miao: "*Scalable Semi-supervised Landmark Localization for X-ray Images using Few-shot Deep Adaptive Graph*", USPTO provisional patent (63/180,717), filed on Apr. 28, 2021.

F. Wang, **K. Zheng**, S. Miao, Y. Wang, L. Lu: "*Opportunistic Screening of Osteoporosis using Plain Film Chest X-ray*", USPTO provisional patent (63/165,231), filed on Mar. 24, 2021.

K. Zheng, S. Miao, Y. Wang, X. Zhou, L. Lu: "*Semi-supervised Learning for Bone Mineral Density Estimation in Hip X-ray Images*", USPTO provisional patent (63/165,223), filed on Mar. 24, 2021.

K. Zheng, Y. Wang, S. Miao, C. Kuo, C. Hsieh: "*Estimating Bone Mineral Density from Plain Radiograph by Assessing Bone Texture with Deep Learning*", USPTO non-provisional patent (17/142,187), filed on Jan. 5, 2021.

K. Zheng, Y. Lu, W. Li, Y. Wang, A. Harrison, L. Lu, S. Miao: "*Method and System for Image Segmentation*", USPTO non-provisional patent (17/128,993), filed on Dec. 21, 2020.

S. Miao, W. Li, Y. Lu, **K. Zheng**, L. Lu: "*Structured Landmark Detection via Topology-Adapting Deep Graph Learning*", USPTO non-provisional patent (17/116,310), filed on Dec. 09, 2020.

S. Miao, F. Wang, **K. Zheng**, L. Lu: "*Automatic Vertebra Localization and Identification in CT by Spine Rectification and Anatomically-Constrained Optimization*", USPTO provisional patent (63/120,693), filed on Dec. 2, 2020.

Y. Wang, H. Chen, **K. Zheng**, A. Harrison, L. Lu, S. Miao: "*Device and Method for*

Computer-Aided Diagnosis Based on Image", USPTO non-provisional patent (16/850,622), filed on Apr. 16, 2020.

Professional Services

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The Visual Computer
IEEE Journal of Biomedical and Health Informatics
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Circuits and Systems for Video Technology
IEEE Transactions on Image Processing
IEEE Transactions on Medical Imaging
IEEE Signal Processing Letters
Pattern Recognition Letters
Computerized Medical Imaging and Graphics
Computers in Biology and Medicine

Conference Reviewer
ICCV 2019, 2021
MICCAI 2020, 2021
CVPR 2021, 2020, 2019
AAAI 2021, 2020, 2019, 2018
ECCV 2020
IJCAI 2019, 2018
ICPR 2020, 2016

Program Committee
AAAI 2020, 2019, 2018
IJCAI 2018