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Zhe Zhu

Education

2011.9–2017.1	★ **PhD, Department of Computer Science and Technology – Tsinghua University**
	Supervisor: Prof.Shimin Hu Research Interest: Computer Graphics and Computer Vision Dissertation: Image Enhancement and Analysis for Street Views (**outstanding graduates in Beijing**)
2007.9–2011.6	★ **Bachelor's Degree, School of Computer Science – Wuhan University**
	Supervisor: Prof.Zhiyong Yuan and Prof. Aiguo Yao Dissertation: Server-side implementation of a sketch based image montage system(**outstanding dissertation**)

Experience

2022.4–Now	★ **Staff Research Engineer, Samsung Research America, Irvine, CA, USA**
	Digital Media Solution team for Samsung Smart TV. Working on image super-resolution using deep learning.
2021.11–2022.4	★ **Senior Software Engineer, MathWorks, Natick, MA, USA**
	Simulink System Composer team. Developing features in Simulink engine(C++).
2019.11–2021.11	★ **Senior Research Associate, Duke University, Durham, NC, USA**
	Deep learning research and application in abdominal MRI
2017.2–2019.11	★ **Postdoc Associate, Duke University, Durham, NC, USA**
	Deep learning research and application in breast MRI.
2016.6–2016.9	★ **Intern Researcher, Adobe Research, San Jose, CA, USA**
	Image inpainting using stock images.

Tech Transfer

★ **Panoramic image completion system for Tencent Street View**

Developed a panoramic image completion system which has been deployed in Tencent Street View. In Tencent Street View project, during the data collection phase devices such as Street View vehicles captured classified content such as military facilities. Those kind of ROIs can be manually identified and should be removed with aesthetic considerations. The developed image completion system automated that process with high-quality completion results.

List of Publications

Selected Paper

11. *3D Pyramid Pooling Network for Liver MRI Series Classification*
    Zhe Zhu, Amber Mittendorf, Erin Shropshire, Brian Allen, Chad Miller, Mustafa R. Bashir, and Maciej A. Mazurowski, *IEEE Transactions on Pattern Analysis and Machine Intelligence*,2020/10/28.

10. *Traffic-Sign Detection and Classification in the Wild*.
    Zhe Zhu, Dun Liang, Songhai Zhang, Xiaolei Huang, Baoli Li, Shi-Min Hu, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016. 2110-2118.

9. *3-Sweep: Extracting Editable Objects from a Single Photo*.
    Tao Chen, **Zhe Zhu**, Ariel Shamir, Shi-Min Hu, Daniel Cohen-Or, *ACM Transactions on Graphics (TOG)*. 2013. Vol. 32. No. 6. (SIGGRAPH Asia 2013).

8. *Extracting 3D Objects from Photographs Using 3-Sweep*.
    Tao Chen, **Zhe Zhu**, Shi-Min Hu, Daniel Cohen-Or, Ariel Shamir, *Communications of the ACM*,2016, Vol. 59 No. 12, Pages 121-129.

7. *Faithful Completion of Images of Scenic Landmarks using Internet Images*
    Zhe Zhu, Hao-Zhi Huang, Zhi-Peng Tan, Kun Xu, Shi-Min Hu, *IEEE Transactions on Visualization and Computer Graphics*, 2016. Volume 22. Issue 8. pp 1945 - 1958.

6. *A Comparative Study of Algorithms for Realtime Panoramic Video Blending*.
    Zhe Zhu, Jiaming Lu, Songhai Zhang, Ralph Martin, Hantao Liu, Shi-Min Hu, *IEEE Transactions on Image Processing*, vol. 27, no. 6, pp. 2952-2965, June 2018.

5. *A Metric for Video Blending Quality Assessment*
    Zhe Zhu, Hantao Liu, Jiaming Lu, and Shi-Min Hu, *IEEE Transactions on Image Processing*, 2019.

4. *An Optimization Approach for Localization Refinement of Candidate Traffic Signs* .
    Zhe Zhu, Jiaming Lu, Ralph Martin, Shi-Min Hu, *IEEE Transactions on Intelligent Transportation Systems*,2017, Vol 18, No. 11, pp 3006-3016.

3. *Computational Design of Transforming Popup Books*.
    Nan Xiao, **Zhe Zhu**, Ralph Martin, Kun Xu, Jiaming Lu, Shi-Min Hu, *ACM Transactions on Graphics*, 37, 1, Article 8 (January 2018), 14 pages.

2. *Hierarchical Convolutional Neural Networks for Segmentation of Breast Tumors in MRI with Application to Radiogenomics*
    Jun Zhang, Ashirbani Saha, **Zhe Zhu**, Maciej Mazurowski, *IEEE Transactions on Medical Imaging*, Volume 38, Issue 2, Pages 435-447, 2019/2.

1. *Mask embedding for Realistic High-resolution Medical Image Synthesis*
    Yinhao Ren, **Zhe Zhu**, Yinzhou Li, Dehan Kong, Lars J.Grimm, Jeffrey R.Marks, Joseph Lo, *MICCAI* 2019.

Other Paper

22. *Duke Liver Dataset: A Publicly Available Liver MRI Dataset with Liver Segmentation Masks and Series Labels*
Jacob A Macdonald, **Zhe Zhu**, Brandon Konkel, Maciej A Mazurowski, Walter F Wiggins, Mustafa R Bashir, *Radiology: Artificial Intelligence*, 2023/7/26.

21. *Sphere Face Model: A 3D morphable model with hypersphere manifold latent space using joint 2D/3D training*
Diqiong Jiang, Yiwei Jin, Fang-Lue Zhang, **Zhe Zhu**, Yun Zhang, Ruofeng Tong, Min Tang *Computational Visual Media*, 2023/6.

20. *Model-Guided 3D Stitching for Video Fusion*
Zhong Zhou, Ming Meng, Yi Zhou, **Zhe Zhu**, Jingdi You, *SCIENCE CHINA Information Sciences*, 2023/1.

19. *Fast Edit Propagation for 360 Degree Panoramas Using Function Interpolation*
Yun Zhang, Fang-Lue Zhang, **Zhe Zhu**, Lidong Wang, Yao Jin, *IEEE Access*, 2022/4/18.

18. *Towards Natural object-based Image Recoloring*
Mengyao Cui, **Zhe Zhu**, Yulu Yang, Shaoping Lu, *Computational Visual Media*, 2022/6.

17. *A Large Chinese Text Dataset in the Wild*
Tai-Ling Yuan, **Zhe Zhu**, Kun Xu, Cheng-Jun Li, Tai-Jiang Mu, Shi-Min Hu, *Journal of Computer Science and Technology*, Volume 34, Issue 3, Pages 509-521, 2019/5/1.

16. *DSNet: Deep Shadow Network for Illumination Estimation*
Yuan Xiong, Hongrui Chen, Jingru Wang, **Zhe Zhu**, and Zhong Zhou, *IEEE VR*, 2021.

15. *Efficient Propagation of Sparse Edits on 360° Panoramas*
Yun Zhang, Fanglue Zhang, Yukun Lai, **Zhe Zhu**, *Computers & Graphics*, 2021.

14. *Deep Learning for identifying radiogenomic associations in breast cancer*
Zhe Zhu, Ehab Albadawy, Ashirbani Saha, Jun Zhang, Michael R Harowicz, Maciej A Mazurowski, *Computers in biology and medicine*, 2019/4/25.

13. *3D Modeling and Motion Parallax for Improved Videoconferencing.*
Zhe Zhu, Ralph R. Martin, Robert Pepperell, Alistair Burleigh, *Computational Visual Media, 2016. Volume 2. Issue 2. pp 131 - 142.*

12. *Panorama Completion for Street Views.*
Zhe Zhu, Ralph R. Martin, and Shi-Min Hu, *Computational Visual Media*, 2015. Vol.1. No.1.

11. *Deep learning analysis of breast MRIs for prediction of occult invasive disease in ductal carcinoma in situ*
Zhe Zhu, Michael Harowicz, Jun Zhang, Ashirbani Saha, Lars J Grimm, E Shelley Hwang, Maciej A Mazurowski, *Computers in Biology and Medicine*, 115, 103498, 2019.

10. *Deep convolutional neural network applied to the liver imaging reporting and data system (LI-RADS) version 2014 category classification: a pilot study.*
Rikiya Yamashita, Amber Mittendorf, **Zhe Zhu**, Kathryn J Fowler, Cynthia S Santillan, Claude B Sirlin, Mustafa R Bashir, Richard KG Do, *Abdominal Radiology*, 2019.

9. *A Three-Stage Real-time Detector for Traffic Signs in Large Panoramas*
Yizhi Song, Ruochen Fan, Sharon Huang, **Zhe Zhu**, Ruofeng Tong, *Computational Visual Media Conference 2019.*

8. *Breast cancer molecular subtype classification using deep features: preliminary results*
Zhe Zhu, Ehab Albadawy, Ashirbani Saha, Jun Zhang, Michael R. Harowicz, Maciej A. Mazurowski, *SPIE Medical Imaging*, 2018.

7. *Deep learning-based features of breast MRI for prediction of occult invasive disease following a diagnosis of ductal carcinoma in situ: preliminary data*
Zhe Zhu, Michael R. Harowicz, Jun Zhang, Ashirbani Saha, Lars J. Grimm, Shelley Hwang, Maciej A. Mazurowski, *SPIE Medical Imaging*, 2018.

6. *Deep neural networks trained for segmentation are sensitive to brightness changes: preliminary results*
   Zhe Zhu, Zhe Zhu, Mustafa R. Bashir, Maciej A. Mazurowski, *SPIE Medical Imaging*, 2021.

5. *Breast Tumor Segmentation in DCE-MRI Using Fully Convolutional Networks with an Application in Radio-genomics*
   Jun Zhang, Ashirbani Saha, **Zhe Zhu**, Maciej A. Mazurowski, *SPIE Medical Imaging*, 2018.

4. *Breast Mass Detection in Mammography and Tomosynthesis via Fully Convolutional Network-based Heatmap Regression*
   Jun Zhang, Elizabeth Hope Cain, Ashirbani Saha, **Zhe Zhu**, Maciej A. Mazurowski, *SPIE Medical Imaging*, 2018.

3. *Convolutional Encoder-Decoder for Breast Mass Segmentation in Digital Breast Tomosynthesis*
   Jun Zhang, Sujata V. Ghate, Lars J. Grimm, Ashirbani Saha, Elizabeth Hope Cain, **Zhe Zhu**, Maciej A. Mazurowski,*SPIE Medical Imaging*, 2018.

2. *Avoiding Bleeding in Image Blending*
   Minxuan Wang, **Zhe Zhu**, Songhai Zhang, Ralph Martin, Shi-Min Hu, *IEEE International Conference on Image Processing (ICIP)*,2017.

1. 基于 *GPU* 加速的实时 *4K* 全景视频拼接
   卢嘉铭, 朱哲, 计算机科学, 44(8), 18-21, 2017.

Paper under Review

3. *Mask Embedding in conditional GAN for Guided Synthesis of High Resolution Images*
   Yinhao Ren, **Zhe Zhu**, Yinzhou Li, Joseph Lo, *arXiv:1907.01710*.

2. *Torque based Structured Pruning for Deep Neural Network*
   Arshita Gupta, Sumit Jha, Joonsoo Kim, Hrishikesh Garud, **Zhe Zhu**, Tien Bao, submitted to *WACV 2024*.

1. *DCDR-UNet: Deformable Convolution Based Detail Restoration via U-shape Network for Single Image HDR Reconstruction*
   Joonsoo Kim, **Zhe Zhu**, Tien Bao, submitted to *WACV 2024*.

Academic Service

Reviewers for:
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Visualization and Computer Graphics
IEEE Transactions on Image Processing
IEEE Transactions on Intelligent Transportation Systems
IEEE Transactions on Medical Imaging
Journal of Computer Science and Technology
Computer & Graphics
CVPR 2019,2020,2021
ICCV 2019,2021
ECCV 2020
MICCAI 2020,2021
AAAI 2020,2021
ACCV 2020
IEEE Signal Processing Letters
Computational Visual Media
Visual Computer

Patents

Method, device and computer-readable storage medium for panoramic image completion - US9165338B2
Tsinghua University, Tencent
Kun Xu, Jianyu Wang, Baoli Li, Haifeng Deng, Zhe Zhu

Digital Image Processing through use of an Image Repository - US20180286023A1
Adobe Inc.
Zhe Zhu, Scott D. Cohen, Brian L. Price

Digital image processing including refinement layer, search context data, or DRM - US10169549B2
Adobe Inc.
Zhe Zhu, Scott D. Cohen, Brian L. Price

Texture mapping method for solid of revolution - 201310446992.6
Tsinghua University
Shimin Hu, Tao Chen, Zhe Zhu

Modeling method for solid of revolution - 201310446573.2
Tsinghua University
Shimin Hu, Tao Chen, Zhe Zhu

Image processing method and device - 201410081866.X
Tencent
Shimin Hu, Jianyu Wang, Haifeng Deng, Kun Xu, Zhe Zhu

Image correction method and device - 201510003719.5
Tencent
Shimin Hu, Tianyi Gui, Zhe Zhu

Panorama completion method and device - 201310019530.6
Tencent, Tsinghua University
Kun Xu, Jianyu Wang, Baoli Li, Haifeng Deng, Zhe Zhu

Line segment matching method and device - 201510532135.7
Tsinghua University
Shimin Hu, Zhe Zhu

Image registration method and device - 201510532152.0
Tsinghua University
Shimin Hu, Zhe Zhu

An optimization approach for localization refinement of candidate traffic signs - 201611170043.X
Tsinghua University
Shimin Hu,Zhe Zhu, Jiaming Lu

Image blending quality assessment method and device - 201810168825.2
Tsinghua University, Tencent
Shimin Hu, Zhe Zhu, Jiaming Lu, Minxuan Wang, Songhai Zhang, Ralph Martin, Hantao Liu, Juhong Wang, Yufei Zheng

Professional Skills

Skilled in C++, Python, Matlab
Familiar with JAVA and C#

Awards

National Scholarship, 2008
Samsung Scholarship, 2009
Kodak Scholarship, 2010
Outstanding Graduates in Beijing, 2017
First Prize of Science and Technology Award of Chinese Institute of Electronics, 2017

Personal Interests

Traditional Chinese culture
Outdoor activity