

Zhebin Zhang, PhD

Contact Information

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Current Position

Postdoctoral Research Associate

the Center for Digital Arts and Experimental Media (DXARTS), University of Washington, Seattle, WA, USA.

Researching on Computer Vision in Experimental Median and Digital Arts, and the relation between EEG signal in brain and visual arts(signal) in the 3D world.

Research Interests

Computer Vision

Depth estimation from monocular/multi-view images or videos by fusing multiple depth cues from multiple sensors, image and video segmentation, 3D scene reconstruction, 3D modelling and depth enhancement for RGBD images

Image and Video Processing

2D-to-3D video conversion (video stereolization), virtual view video synthesis for free-viewpoint and auto-stereoscopic video

Machine Learning

Basis and Dictionary Learning for scene structure analysis and reconstruction

Brain, Arts and Vision

Research on Computer Vision in Experimental Median and Digital Arts, and the relation between EEG signal in brain real and visual signal and visual arts.

Education and Degrees

2012 **Ph.D.** in Computer Science, with Prof. Wen Gao, (Degree awarded in 2013)
Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China.

2005 **B.S.** in Computer Science
Beijing University of Post and Telecommunications, Beijing, China.

Academic Working Experience

Postdoctoral Research Associate, with Prof. James Coupe

the Center for Digital Arts and Experimental Media (DXARTS), University of Washington, Seattle, USA 2015--Now

- Research on Computer Vision in Experimental Median and Digital Arts
- Research on relation between EEG signal in brain and visual arts(signal) in the 3D world.

Postdoctoral Research Associate, with Prof. Mingting Sun

Department of Electrical Engineering, University of Washington, Seattle, USA
2014 - 2015

- Research on 3D reconstruction from RGBD data, e.g. Kinect captured data.

Postdoctoral Fellow, with Prof. Yizhou Wang

Nat'l Engineering Lab. for Video Tech., PKU, Beijing, China 2012 - 2014

- Research on depth estimation by fusing multiple monocular depth cues
- Research on virtual views synthesis for auto-stereoscopic display
- Lead a team implementing an interactive 2D-to-3D video conversion system.

Research Assistant, Nat'l Engineering Lab. for Video Tech., PKU, Beijing, China, supervised by Prof. Wen Gao, Prof. Yizhou Wang, and Dr. Longshe Huo 2007 - 2012

- Research on depth estimation from a monocular video/image
- Research on disparity estimation by training a model from stereo video shots
- Implement an automatic 2D-to-3D video conversion system
- Research on stereo matching and virtual view synthesis

Research Assistant, Lotus Hill Research Institute, Wuhan, China, supervised by Prof. Song-Chun Zhu Summer 2008

- Research on scene parsing and 3D reconstruction from an image

Intern, NEC Research Lab., Beijing, China, with Dr. Wei Zeng Summer 2007

- Research on stereo matching, virtual view synthesis, image stitching

Research Assistant, ICT of CAS, Beijing, China, with Dr. Dawei Liang, supervised by Prof. Qingming Huang 2005 - 2006

- Research on 3D scene reconstruction and rendering from sports videos

Publications

Journals

- Zhebin Zhang, Chen Zhou, Ronggang Wang, Yizhou Wang and Wen Gao, *A Compact Representation for Compressing Converted Stereo Videos*, IEEE T. on Image Processing, pp.2343 - 2355, Vol.23, Issue.5, May 2014.
- Zhebin Zhang, Chen Zhou, Yizhou Wang and Wen Gao, *Interactive Stereoscopic Video Conversion*, IEEE T. on Circuits and Systems on Video Technology, pp.1795-1808, Vol.23, Issue.10, Oct. 2013.
- Zhebin Zhang, Ji'an Zhang, Xuexi Zhang, Yizhou Wang, Wen Gao, *A Distributed 2D-to-3D Video Conversion System*, China Communications, Vol.10, No.5, pp. 30-38, May, 2013

Conferences

- Zhebin Zhang, Chen Zhou, Bo Xin, Yizhou Wang, Wen Gao, *An Interactive System of Stereoscopic Video Conversion*, ACM Multimedia, Nara, Japan, Oct.2012 (Oral)
- Zhebin Zhang, Ronggang Wang, Chen Zhou, Yizhou Wang, Wen Gao, *A Compact Stereoscopic Video Representation for 3D Video Generation and Coding*, Data Compression Conference, USA, Apr.2012 (Oral)
- Zhebin Zhang, Yizhou Wang, Tingting Jiang and Wen Gao, *Visual Pertinent 2D-to-3D Video Conversion By Multi-cue Fusion*, 18th IEEE International Conference on Image Processing (ICIP), Belgium, Sept.2011 (Poster)
- Zhebin Zhang, Yizhou Wang, Tingting Jiang, Wen Gao, *Stereoscopic Learning for Disparity Estimation*, IEEE International Symposium on Circuits and Systems, Rio de Janeiro, Brazil, May.2011 (Oral)
- Shuolin Di, Zhebin Zhang, Shiqi Wang, Siwei Ma, *Image Guided Label Map Propagation in Video Sequences*, IEEE Proceeding of International Symposium on Circuits and Systems (ISCAS), 2015 (Poster)
- Ji'an Zhang, Zhebin Zhang, *Depth Map Propagation with the Texture Image Guidance*, 21st IEEE International Conference on Image Processing, Paris, Oct.2014 (Poster)
- Ge Guo, Luoqi Liu, Zhebin Zhang, Yizhou Wang, and Wen Gao, *An Interactive Method for Curve Extraction*, in proceedings of IEEE International Conference on Image Processing (ICIP) HongKong, China, Sept.26-29, 2010 (Poster)
- Zhebin Zhang, Longshe Huo, Chao Xia, Wei Zeng, Wen Gao, *A Virtual View Generation Method for Free-Viewpoint Video System*, Proc. of 2007 Interna-

tional Symposium on Intelligent Signal Processing and Communication Systems (ISPACS 2007), Xiamen, China, pp. 361-364, Nov.28, 2007

- Chao Xia, Longshe Huo, Zhebin Zhang, Wei Zeng, Wen Gao, *Segmentation-Based Dense Stereo Matching Algorithm for Virtual View Synthesis*, Proc. of 2007 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS 2007), Xiamen, China, pp. 409-412, Nov.28, 2007
- Dawei Liang, Yang Liu, Qingming Huang, Guangyu Zhu, Shuqiang Jiang, Zhebin Zhang, Wen Gao, *Video2Cartoon: Generating 3D Cartoon from Broadcast Soccer Video*, Proceedings of the 13th ACM International Conference on Multimedia(ACM MM 2005), Singapore, pp217-218, Nov.06-11, 2005

Programming Skills

- **Programming Languages and IDEs** :C++, Matlab, Visual Studio
- **Parallel and High Performance Computing**: OpenMP
- **Image and Video Processing SDKs**: OpenCV, Kinect SDK
- **Computer Graphics and Visualization Tools**: OpenGL, VTK
- **Database**: MySQL
- **Multimedia Control, Transmission and Digital Arts Exhibition tools**: Open Sound Control

Research Grants and Funding

- The Chinese National Natural Science Foundation, 2014
- International Postdoctoral Exchange Fellowship Program by the Office of China Postdoctoral Council, 2013.
- The China Postdoctoral Science Foundation (CPSF), 2013–2014,

Honors and Awards

- Outstanding Staff Award, Joint Research and development Lab. for Advanced Computer and Communication Tech, 2012.
- Innovation Scholarship, ICT of CAS, supported by Bewinner Communication Tech. Co. Ltd, 2011.
- AVS Annual Award, Audio Video coding Standard Workgroup of China, 2010.
- “Three-good” Student Award (good in study, attitude and health), Chinese Academy of Sciences, 2009.
- Scholarships, Beijing University of Post and Telecommunications, 2003–2005.

Patents

- Yizhou Wang, Zhebin Zhang and Wen Gao, A method of 3D scene reconstruction from a single image(in Chinese). ZL200910242416.3.
- Yizhou Wang, Zhebin Zhang and Wen Gao, A multi-view 3D scene reconstruction system based on a method fusing additional monocular cues(in Chinese). ZL200910241800.1.

Major Professional Service

- Reviewer, IET Image Processing, since 2015
- Reviewer, for reviewing the funding proposals of The Chinese National Natural Science Foundation, since April 2014.
- Reviewer, IEEE Signal Processing Letters, since 2014.
- Reviewer, Journal of Visual Communication and Image Representation, Elsevier, since 2014.
- Reviewer, Chinese Journal of Computers, since 2013.
- Reviewer, Multimedia Systems, Springer, since 2013.
- Reviewer, International Journal of Computer Mathematics, since 2013.

Teaching

- Multimedia Technologies - Stereo Video and Coding (graduate course), co-teaching with Prof. Ronggang Wang, School of Electronic and Computer Engineering, Peking University - Shenzhen Graduate School, Shenzhen, China, Spring 2014.
- Video Coding and Understanding (Graduate course), co-teaching with Prof. Siwei Ma, School of Electronics Engineering and Computer Science, Peking University, Peking, China, Autumn 2013.
- Fundamentals of Digital Media (Undergraduate course), co-teaching with Prof. Tiejun Huang, School of Electronics Engineering and Computer Science, Peking University, Peking, China, Spring 2013.
- Multimedia Technologies - Stereo Video and Coding (graduate course), co-teaching with Prof. Ronggang Wang, School of Electronic and Computer Engineering, Peking University - Shenzhen Graduate School, Shenzhen, China, Spring 2013.
- Introduction to Computer System (undergraduate course), co-teaching with Prof. Yizhou Wang and Prof. Wen Gao, Teaching as a mentor to guide group seminar of students discussion (24 student, 2 hours per week for 18 weeks), School of Electronics Engineering and Computer Science, Peking University, Peking, China, Autumn 2012.
- Multimedia Technologies - Stereo Video and Coding (graduate course), co-teaching with Prof. Ronggang Wang, School of Electronic and Computer Engineering, Peking University - Shenzhen Graduate School, Shenzhen, China, Spring 2012.