

# Miao Wang

Assistant Professor

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Research Institute for Frontier Science

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## EDUCATION

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- **Tsinghua University** Beijing, China  
*Ph.D. in Computer Science and Technology, advisor: Prof. Shi-Min Hu* *Sept. 2011 – Jul. 2016*
- **Xidian University** Xi'an, Shaanxi, China  
*Bachelor of Engineering in Computer Science and Technology (with honors)* *Sept. 2007 – Jul. 2011*

## WORK & RESEARCH EXPERIENCE

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- **Tsinghua University** Beijing, China  
*Postdoc Researcher* *Jul. 2016 – Oct. 2018*
  - **Visual Computing:** Computer graphics & computer vision projects, including interactive video editing, deep learning methodology in graphics, computational cinematography and video for VR.
- **Cardiff University** Cardiff, UK  
*Visiting Student* *Aug. 2013 – Feb. 2014*
  - **Photo Extrapolation:** Worked on an image extrapolation project to expand the field-of-view of natural scenes using a data-driven method, with Prof. Ralph Martin and Dr. Yu-Kun Lai.

## RESEARCH INTERESTS

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**Graphics and VR/AR:** video for VR; visual computing for AR; deep learning-based image/video synthesis

## PUBLICATIONS

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1. **Miao Wang**, Yi-Jun Li, Wen-Xuan Zhang, Christian Richardt and Shi-Min Hu. Transitioning360: Content-aware NFoV Virtual Camera Paths for 360 Video Playback. Conditionally accepted to IEEE International Symposium on Mixed and Augmented Reality (ISMAR) 2020. **(CCF-B)**
2. Xin Wen, **Miao Wang**, Christian Richardt, Ze-Yin Chen and Shi-Min Hu. Photorealistic Audio-driven Video Portraits. Conditionally accepted to IEEE Transactions on Visualization and Computer Graphics (Special Issue of ISMAR 2020). **(CCF-A)**
3. Meng-Yao Cui, Shao-Ping Lu, **Miao Wang**, Yong-Liang Yang, Yu-Kun Lai and Paul L. Rosin. 3D Computational Modeling and Perceptual Analysis of Kinetic Depth Effects. Computational Visual Media, to appear.
4. **Miao Wang**, Xu-Quan Lyu, Yi-Jun Li and Fang-Lue Zhang. VR content creation and exploration with deep learning: A survey. Computational Visual Media 6, 328 (2020)
5. **Miao Wang**, Xiao-Nan Fang, Guo-Wei Yang, Ariel Shamir and Shi-Min Hu. Prominent Structures for Video Analysis and Editing. IEEE Transactions on Visualization and Computer Graphics, to appear. **(CCF-A)**
6. **Miao Wang**, Guo-Wei Yang, Shi-Min Hu, Shing-Tung Yau and Ariel Shamir. Computational Video Montage from Themed Text. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 38 (6), Article No.177, 2019. **(CCF-A)**
7. Xiao-Nan Fang, **Miao Wang**, Ariel Shamir and Shi-Min Hu. Learning Explicit Smoothing Kernels for Joint Image Filtering. Computer Graphics Forum (Proc. Pacific Graphics), 38 (7), 181-190, 2019. **(CCF-B)**
8. **Miao Wang**, Xin Wen and Shi-Min Hu. Faithful Face Image Completion for HMD Occlusion Removal. IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct) 2019, to appear.
9. **Miao Wang**, Guo-Ye Yang, Ruilong Li, Runze Liang, Song-Hai Zhang, Peter M. Hall and Shi-Min Hu. Example-Guided Style-Consistent Image Synthesis from Semantic Labeling. IEEE CVPR 2019. **(CCF-A)**
10. Shu-Yang Zhang, Run-Ze Liang and **Miao Wang**. ShadowGAN: Shadow Synthesis for Virtual Objects with Adversarial Networks. Computational Visual Media, 5 (1), 105-115, 2019.

11. **Miao Wang**, Guo-Ye Yang, Jin-Kun Lin, Shao-Ping Lu, Ariel Shamir and Shi-Min Hu. Deep Online Video Stabilization With Multi-Grid Warping Transformation Learning. *IEEE Transactions on Image Processing*, 28 (5), 2283-2292, 2019. (CCF-A)
12. Sen-Zhe Xu, Jun Hu, **Miao Wang**, Tai-Jiang Mu and Shi-Min Hu. Deep Video Stabilization Using Adversarial Networks. *Computer Graphics Forum*, 37 (7), 267-276, 2018. (Pacific Graphics 2018) (CCF-B)
13. **Miao Wang**, Ariel Shamir, Guo-Ye Yang, Jin-Kun Lin, Guo-Wei Yang, Shao-Ping Lu and Shi-Min Hu. BiggerSelfie: Selfie Video Expansion with Hand-held Camera. *IEEE Transactions on Image Processing*, 27 (12), 5854-5865, 2018. (CCF-A)
14. Shao-Ping Lu, Jie You, Beerend Ceulemans, **Miao Wang** and Adrian Munteanu. Synthesis of Shaking Video using Motion Capture data and Dynamic 3D Scene Modeling. *IEEE ICIP 2018*. (CCF-C)
15. **Miao Wang**, Jun-Bang Liang, Song-Hai Zhang, Shao-Ping Lu, Ariel Shamir and Shi-Min Hu. Hyper-lapse Creation from Multiple Spatially-overlapping Videos. *IEEE Transactions on Image Processing*, 27 (4), 1735-1747, 2018. (CCF-A)
16. **Miao Wang**, Xi-Jin Zhang, Jun-Bang Liang, Song-Hai Zhang and Ralph R. Martin. Comfort-driven Disparity Adjustment for Stereoscopic Video. *Computational Visual Media*, 2 (1), 3-17, 2016.
17. Shao-Ping Lu, Sibofeng, Beerend Ceulemans, **Miao Wang**, Rui Zhong and Adrian Munteanu. Multiview Conversion of 2D Cartoon Images. *Communications in Information and Systems*, 16 (4), 229-254, 2016.
18. **Miao Wang**, Yu-Kun Lai, Yuan Liang, Ralph R. Martin and Shi-Min Hu. BiggerPicture: Data-Driven Image Extrapolation Using Graph Matching. *ACM Transactions on Graphics*, 33 (6), Article No. 173, 2014. (SIGGRAPH Asia 2014) (CCF-A)
19. Shi-Min Hu, Fang-Lue Zhang, **Miao Wang**, Ralph R. Martin and Jue Wang. PatchNet: A Patch-based Image Representation for Interactive Library-driven Image Editing. *ACM Transactions on Graphics*, 32 (6), Article No. 196, 2013. (SIGGRAPH Asia 2013) (CCF-A)
20. Fang-Lue Zhang, **Miao Wang** and Shi-Min Hu. Aesthetic Image Enhancement by Dependence-Aware Object Re-Composition. *IEEE Transactions on Multimedia*, 15 (7), 1480-1490, 2013. (CCF-B)
21. **Miao Wang**, Fang-Lue Zhang and Shi-Min Hu. Data-driven Image Analysis and Editing: A Survey. *Journal of Computer-Aided Design & Computer Graphics*, 27 (11), 2015-2024, 2015. (In Chinese)

## TEACHING EXPERIENCE

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- **Fundamental of Computer Graphics** Tsinghua University, Beijing  
*Teaching Assistant* *Spring 2013*
  - Assisted lecturer preparing courseware, organizing seminar and making the paper.

## ACADEMIC SERVICES

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- **Advisory Board:** Beijing Organizing Committee for the 2022 Olympics Winter Games, Jun.–Sept. 2018
- **Conference Committee:**
  - ISMAR 2019, Oct., Beijing, China
- **Program Committee:**
  - Pacific Graphics 2020
  - ISMAR 2020
  - ChinaGraph 2020
  - Computational Visual Media 2020
  - Workshop on Vision meets Graphics, Nov. 2017, Wuhan, China
- **Reviewing:**
  - **Conference:** SIGGRAPH 2017, 2018; SIGGRAPH Asia 2018, 2019; Pacific Graphics 2016, 2018; ICIG 2017; CVM 2013-2019
  - **Transactions:** IEEE TVCG, CVMJ, Computer Graphics Forum, The Visual Computer, Journal of Computer Science and Technology

## INVITED TALKS

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- **Data-driven Image and Video Synthesis.** ICT, CAS, Sept. 2019
- **Video Alignment Using Prominent Structures.** The 3rd Tsinghua-Cardiff workshop on Visual Computing, Sept. 2018
- **Hyper-lapse Creation from Multiple Spatially-overlapping Videos.** Top Paper Section, International Conference on Virtual Reality and Visualization, Oct. 2017
- **Multiple-source Hand-held Video Editing.** The 2nd Tsinghua-Cardiff workshop on Visual Computing, Sept. 2017
- **Data-driven Image Extrapolation.** Microsoft Research Asia PhD Forum, Sept. 2014
- **PatchNet: A Patch-based Image Representation for Interactive Library-driven Image Editing.** Visual Computing Group, Cardiff University, Nov. 2013

## SELECTED AWARDS

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- **National Science and Technology Progress Award:** Large-Scale Street-View System with Location-Based Service (2nd Prize, 9th Achiever), 2018.

## GRANTS

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- **Youth Program, National Natural Science Foundation of China.** Data-driven Interactive Image-to-Image Translation, PI, 2020-2022.
- **China Postdoctoral Science Foundation.** Tempo-spatial coherence analysis for camera path partition and editing, PI, 2016-2018.
- **International (regional) joint research program, National Natural Science Foundation of China.** Data-driven processing of visual media, Main Participant, 2016-2018.

## ISSUED PATENTS

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- **PatchNet Model and Construction Method Thereof.** Shi-Min Hu, Fang-Lue Zhang and Miao Wang, US9836880B2, 2017.
- **Aesthetic Image Enhancement by Dependence-Aware Object Re-Composition.** Shi-Min Hu, Fang-Lue Zhang and Miao Wang, CN201210455248.8, 2013.
- **Saliency-aware Video Object Cutout Based-on Super-pixel Segmentation.** Shi-Min Hu, Miao Wang, Tao Chen, Kun Xu and Jun-Jun Xiong, CN20110458008.9, 2011.