

# Shuaicheng Liu

Associate Professor  
School of Information and Communication Engineering  
University of Electronic Science and Technology of China  
Xiyuan Ave, Chengdu, Sichuan, China, 611731

Email: liushuaicheng@uestc.edu.cn

Homepage: [www.liushuaicheng.org](http://www.liushuaicheng.org)  
[[Google Scholar](#)] [[DBLP](#)]

## EDUCATION

---

- **Ph.D. - National University of Singapore** Singapore  
*Thesis: Digital Video Stabilization* Jan. 2011 - Dec. 2014  
*Supervisor: Prof. Ping Tan*
- **Master - National University of Singapore** Singapore  
*Thesis: Digital Image Super-Resolution* July. 2008 - Dec. 2010  
*Supervisor: Prof. Michael S. Brown*
- **Bachelor - Sichuan University** China  
*Computer Science* Sept. 2004 - Jun. 2008

## PROFESSIONAL EXPERIENCES

---

- **University of Electronic Science and Technology of China**  
*Associate Professor, School of Information and Communication Engineering* Jan. 2018 - Now
- **University of Electronic Science and Technology of China**  
*Associate Professor, School of Electronic Engineering* March 2015 - Dec. 2017
- **Megvii Research**  
*Research Director (Part-time), Megvii Research Chengdu* May 2018 - Now
- **Qihoo 360 AI Lab**  
*Visiting Professor, Host: Prof. Ping Tan* 2016 summer
- **Adobe Research, Seattle, USA**  
*Intern, Creative Lab* 2013 summer  
*Mentors: Dr. Sunghyun Cho, Dr. Jue Wang*
- **Microsoft Research Asia, Beijing, China**  
*Intern, Vision Lab* Sept. 2012 - March 2013  
*Mentors: Dr. Lu Yuan, Dr. Jian Sun*

## GRANTS

---

- **General Program (61872067) - National Natural Science Foundation of China (NSFC):**  
Title: The Research of Computational Photograph based on Video Coding  
RMB: 650,000, 2019-01 ~ 2022-12, PI: Shuaicheng Liu
- **Young Scholars (61502079) - National Natural Science Foundation of China (NSFC):**  
Title: The Research of Key Technology of Video Stabilization  
RMB: 220,000, 2016-01 ~ 2018-12, PI: Shuaicheng Liu
- **International Cooperation (61720106004) - National Natural Science Foundation of China (NSFC):**  
Title: The Research of Key Technology of Wireless Capsule Endoscope Imaging  
RMB: 2,200,000, 2018-01 ~ 2022-12, PI: Bing Zeng, Co-PI: Shuaicheng Liu.
- **International Program (2019YFH0016) - Research Programs of Science and Technology in Sichuan Province:**  
Title: The Research of Computer Vision based on Video Coding  
RMB: 20,000, 2019-01 ~ 2022-01, PI: Shuaicheng Liu
- **Research and Development Grant (521999150031) - State Grid Corporation of China:**  
Title: The Research of emergency inspection by UAV.  
RMB: 500,000, 2015-01 ~ 2016-01, PI: Shuaicheng Liu.
- **Starting Funds - Fundamental Research Funds for Central Universities:**  
Title: The Research of Critical Technologies based on Portable Depth/Stereo Camera  
RMB: 20,000, 2016-01 ~ 2017-12, PI: Shuaicheng Liu
- **Basic Research - HuaWei Technologies Co.,Ltd:**  
Title: The Research of Video Stabilization  
RMB: 500,000, 2016-12 ~ 2017-05, PI: Shuaicheng Liu.
- **Unrestricted Research Gift - Adobe:**  
Title: Unrestricted Research Gift  
USD: \$17,500, 2015, PI: Ping Tan, Co-PI: Shuaicheng Liu.

1. **Shuaicheng Liu**, Kunming Luo, Nianjin Ye, Chuan Wang, Jue Wang, Bing Zeng, “OIFlow: Occlusion-Inpainting Optical Flow Estimation by Unsupervised Learning”, *IEEE Transactions on Image Processing (TIP)*, vol. 30, pp. 6420-6433, 2021.
2. Lang Nie, Chunyu Lin, Kang Liao, **Shuaicheng Liu**, Yao Zhao, “Unsupervised Deep Image Stitching: Reconstructing Stitched Features to Images”, *IEEE Transactions on Image Processing (TIP)*, vol. 30, pp. 6184-6197, 2021. [[webpage](#)]
3. Jiaxiong Qiu, Cai Chen, **Shuaicheng Liu**, Henry Zhang, Bing Zeng, “SlimConv: Reducing Channel Redundancy in Convolutional Neural Networks by Features Recombining”, *IEEE Transactions on Image Processing (TIP)*, vol. 30, pp. 6434-6445, 2021. [[webpage](#)]
4. Chuan Wang, Shan Zhao, Li Zhu, Kunming Luo, Yanwei Guo, Jue Wang, **Shuaicheng Liu**, “Semi-supervised Pixel-level Scene Text Segmentation by Mutually Guided Network”, *IEEE Transactions on Image Processing (TIP)*, vol. 30, pp. 8212-8221, 2021.
5. Ru Li, **Shuaicheng Liu**, Guangfu Wang, Guanghui Liu, Bing Zeng, “JigsawGAN: Auxiliary Learning for Solving Jigsaw Puzzles with Generative Adversarial Networks”, *IEEE Transactions on Image Processing (TIP)*, 2021.
6. Tiecheng Sun, Guanghui Liu, Ru Li, **Shuaicheng Liu**, Shuyuan Zhu, Bing Zeng, “Quadratic Terms based Point-to-Surface 3D Representation for Deep Learning of Point Cloud”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2021.
7. **Shuaicheng Liu**, Haipeng Li, Zhengning Wang, Jue Wang, Shuyuan Zhu, Bing Zeng, “DeepOIS: Gyroscope-Guided Deep Optical Image Stabilizer Compensation”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2021. [[webpage](#)]
8. Lang Nie, Chunyu Lin, Kang Liao, **Shuaicheng Liu**, Yao Zhao, “Depth-Aware Multi-Grid Deep Homography Estimation with Contextual Correlation”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2021.
9. **Shuaicheng Liu**, Kunming Luo, Ao Luo, Chuan Wang, Fanman Meng, Bing Zeng, “ASFlow: Unsupervised Optical Flow Learning with Adaptive Pyramid Sampling”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2021.
10. Liyang Zhang, **Shuaicheng Liu**, Donghao Liu, Pengpeng Zeng, Xiangpeng Li, Jingkuan Song, Lianli Gao, “Rich Visual Knowledge-based Augmentation Network for Visual Question Answering”, *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, vol. 32, no. 10, pp. 4362-4373, 2021.
11. Zhengning Wang, Fanwei Zeng, **Shuaicheng Liu**, Bing Zeng, “OAENet: Oriented Attention Ensemble for Accurate Facial Expression Recognition”, *Pattern Recognition (PR)*, vol. 112, pp. 107694, 2021.
12. Tiecheng Sun, Guanghui Liu, **Shuaicheng Liu**, Fanman Meng, Liaoyuan Zeng, Ru Li, “An Efficient and Compact 3D Local Descriptor based on the Weighted Height Image”, *Information Sciences*, vol. 520, pp. 209-231, 2020.
13. Peng Dai, Zhuwen Li, Yinda Zhang, **Shuaicheng Liu**, Bing Zeng, “PBR-Net: Imitating Physically Based Rendering using Deep Neural Network”, *IEEE Transactions on Image Processing (TIP)*, vol. 29, pp. 5980-5992, 2020.
14. Ru Li, Chi-Hao Wu, **Shuaicheng Liu**, Jue Wang, Guangfu Wang, Guanghui Liu, Bing Zeng, “SDP-GAN: Saliency Detail Preservation Generative Adversarial Networks for High Perceptual Quality Style Transfer”, *IEEE Transactions on Image Processing (TIP)*, vol. 30, pp. 374-385, 2020.
15. Ru Li, **Shuaicheng Liu**, Guanghui Liu, Tiecheng Sun, Jishun Guo, “Multi-exposure photomontage with hand-held cameras”, *Computer Vision and Image Understanding (CVIU)*, vol. 193, pp. 102929, 2020.
16. Heng Guo, **Shuaicheng Liu**, Shuyuan Zhu, Heng Tao Shen, Bing Zeng, “View-Consistent MeshFlow for Stereoscopic Video Stabilization”, *IEEE Transactions on Computational Imaging (TCI)*, vol. 4, no. 4, pp. 573-584, 2019.
17. Shuyuan Zhu, Zhiying He, Chen Chen, **Shuaicheng Liu**, Jiantao Zhou, Yuanfang Guo, Bing Zeng, “High-Quality Color Image Compression by Quantization Crossing Color Spaces”, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 19, no. 5, pp. 1474-1487, 2019.
18. Shuyuan Zhu, Mingyu Li, Chen Chen, **Shuaicheng Liu**, Bing Zeng, “Cross-Space Distortion Directed Color Image Compression”, *IEEE Transactions on Multimedia (TMM)*, vol. 20, no. 3, pp. 525-538, 2017.
19. Yinglong Wang, **Shuaicheng Liu**, Chen Chen, Bing Zeng, “A Hierarchical Approach for Rain or Snow Removing in A Single Color Image”, *IEEE Transactions on Image Processing (TIP)*, vol. 26, no. 8, pp. 3936-3950, 2017.

20. **Shuaicheng Liu**, Mingyu Li, Shuyuan Zhu, Bing Zeng, “CodingFlow:Enable Video Coding for Video Stabilization”, IEEE Transactions on Image Processing (**TIP**), vol. 26, no. 7, pp. 3291-3302, 2017.
21. **Shuaicheng Liu**, Binhan Xu, Chuang Deng, Shuyuan Zhu, Bing Zeng, Moncef Gabbouj, “A Hybrid Approach for Near-Range Video Stabilization”, IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**), vol. 27, no. 9, pp. 1922-1933, 2017.
22. Heng Guo, **Shuaicheng Liu**, Tong He, Shuyuan Zhu, Bing Zeng, Moncef Gabbouj, “Joint Video Stitching and Stabilization from Moving Cameras”, IEEE Transactions on Image Processing (**TIP**), vol. 25, no. 11, pp. 5491-5503, 2016. [[webpage](#)]
23. Kaimo Lin, **Shuaicheng Liu**, Loong-Fah Cheong, Bing Zeng, “Seamless Video Stitching from Hand-held Camera Inputs”, Computer Graphics Forum, Proceedings of EuroGraphics, vol. 35, no. 2, pp. 479-487, 2016. [[webpage](#)]
24. **Shuaicheng Liu**, Jue Wang, Sunghyun Cho, Ping Tan, “TrackCam: 3D-aware Tracking Shots from Consumer Video”, ACM Transactions on Graphics (**ToG**), Proceedings of **SIGGRAPH** asia, 2014. [[webpage](#)]
25. **Shuaicheng Liu**, Lu Yuan, Ping Tan, Jian Sun, “Bundled Camera Paths for Video Stabilization”, ACM Transactions on Graphics (**ToG**), Proceedings of **SIGGRAPH**, 2013. [[webpage](#)]

---

#### PUBLICATIONS - CONFERENCE

26. Nianjin Ye, Chuan Wang, Haoqiang Fan, **Shuaicheng Liu**, “Motion Basis Learning for Unsupervised Deep Homography Estimation with Subspace”, IEEE International Conference on Computer Vision (**ICCV**), 2021. **Oral, 3%** [[webpage](#)]
27. Cheng Zhang, Zhaopeng Cui, Cai Chen, **Shuaicheng Liu**, Bing Zeng, Hujun Bao, Yinda Zhang, “DeepPanoContext: Panoramic 3D Scene Understanding with Holistic Scene Context Graph and Relation-based Optimization”, IEEE International Conference on Computer Vision (**ICCV**), 2021. **Oral, 3%** [[webpage](#)]
28. Hao Xu, **Shuaicheng Liu**, Guangfu Wang, Guanghui Liu, Bing Zeng, “OMNet: Learning Overlapping Mask for Partial-to-Partial Point Cloud Registration”, IEEE International Conference on Computer Vision (**ICCV**), 2021. [[webpage](#)]
29. Haipeng Li, Kunming Luo, **Shuaicheng Liu**, “GyroFlow: Gyroscope-Guided Unsupervised Optical Flow Learning”, IEEE International Conference on Computer Vision (**ICCV**), 2021. [[webpage](#)]
30. Yuchen Yang, Ye Xiang, **Shuaicheng Liu**, Lifang Wu, Boxuan Zhao, Bing Zeng, “GLM-Net : Global and Local Motion Estimation via Task-Oriented Encoder-Decoder Structure”, ACM Multimedia (**MM**), 2021. [[webpage](#)]
31. Zhen Liu, Ting Jiang, Mingyan Han, Haoqiang Fan, Jian Sun, **Shuaicheng Liu**, “ADNet: Attention-guided Deformable Convolutional Network for High Dynamic Range Imaging”, IEEE Conference on Computer Vision and Pattern Recognition Workshop (**CVPRW**), NTIRE Challenges - HDR (**Winner**), 2021. [[webpage](#)]
32. Ziwei Luo, Youwei Li, Lanpeng Jia, Haoqiang Fan, Jian Sun, **Shuaicheng Liu**, “EBSR: Feature Enhanced Burst Super-Resolution with Deformable Alignment”, IEEE Conference on Computer Vision and Pattern Recognition Workshop (**CVPRW**), NTIRE Challenges - Super Resolution (**Winner**), 2021. [[webpage](#)]
33. Shen Cheng, Xin Lu, Yifeng Zhou, Liangyu Chen, Xiangyu Zhang, Haoqiang Fan, Jian Sun, **Shuaicheng Liu**, “Fast Camera Image Denoising on Mobile GPUs with Deep Learning, Mobile AI 2021 Challenge: Report”, IEEE Conference on Computer Vision and Pattern Recognition Workshop (**CVPRW**), MAI Challenges - Smartphone Image Denoising (**Runner up**), 2021.
34. Kunming Luo, Chuan Wang, **Shuaicheng Liu**, Haoqiang Fan, Jue Wang, Jian Sun, “UPFlow: Upsampling Pyramid for Unsupervised Optical Flow Learning”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021. [[webpage](#)]
35. Shen Cheng, Yuzhi Wang, Haibin Huang, Donghao Liu, Haoqiang Fan, **Shuaicheng Liu**, “NBNet: Noise Basis Learning for Image Denoising with Subspace Projection”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021. [[webpage](#)]
36. Cheng Zhang, Zhaopeng Cui, Yinda Zhang, Bing Zeng, Marc Pollefeys, **Shuaicheng Liu**, “Holistic 3D Scene Understanding from a Single Image with Implicit Representation”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021. [[webpage](#)]
37. Jing Tan, Shan Zhao, Pengfei Xiong, Jiangyu Liu, Haoqiang Fan, **Shuaicheng Liu**, “Practical Wide-Angle Portraits Correction with Deep Structured Models”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021. [[webpage](#)]

38. Jirong Zhang, Chuan Wang, **Shuaicheng Liu**, Lanpeng Jia, Jue Wang, Ji Zhou, Jian Sun, “Content-Aware Unsupervised Deep Homography Estimation”, European Conference on Computer Vision (**ECCV**). 2020. **Oral**, **2%** [[webpage](#)]
39. Mingyi Zhou, Jing Wu, Yipeng Liu, **Shuaicheng Liu**, Ce Zhu, “DaST: Data-free Substitute Training for Adversarial Attacks”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020. **Oral**, **5.7%** [[webpage](#)]
40. Peng Dai, Yinda Zhang, Zhuwen Li, **Shuaicheng Liu**, Bing Zeng, “Neural Point Cloud Rendering via Multi-Plane Projection”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020. [[webpage](#)]
41. Xiandong Meng, Xuan Deng, Shuyuan Zhu, **Shuaicheng Liu**, Bing Zeng, “Flow-Guided Temporal-Spatial Network for HEVC Compressed Video Quality Enhancement”, Data Compression Conference (**DCC**), 2020.
42. Chao Zhang, **Shuaicheng Liu**, Xun Xu, Ce Zhu, “C3AE: Exploring the Limits of Compact Model for Age Estimation”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019.
43. Jiaxiong Qiu, Zhaopeng Cui, Yinda Zhang, Xingdi Zhang, **Shuaicheng Liu**, Bing Zeng, Marc Pollefeys, “DeepLiDAR: Deep Surface Normal Guided Depth Prediction for Outdoor Scene from Sparse LiDAR Data and Single Color Image”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2019. [[webpage](#)]
44. Tiecheng Sun, **Shuaicheng Liu**, Guanghui Liu, Shuyuan Zhu, Zhipeng Zhu, “A 3D Descriptor based on Local Height Image”, IEEE International Symposium on Circuits and Systems (ISCAS), 2018.
45. Kaimo Lin, Nianjuan Jiang, **Shuaicheng Liu**, Loong-Fah Cheong, Minh Do, Jiangbo Lu, “Direct Photometric Alignment by Mesh Deformation”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**). 2017. [[webpage](#)]
46. **Shuaicheng Liu**, Ping Tan, Lu Yuan, Jian Sun, Bing Zeng, “MeshFlow: Minimum Latency Online Video Stabilization”, European Conference on Computer Vision (**ECCV**), 2016. [[webpage](#)]
47. Chao Sun, **Shuaicheng Liu**, Taotao Yang, Bing Zeng, Zhengning Wang, Guanghui Liu, “Automatic Reflection Removal using Gradient Intensity and Motion Cues”, ACM Multimedia (**MM**), 2016. [[webpage](#)]
48. **Shuaicheng Liu**, Lu Yuan, Ping Tan, Jian Sun, “SteadyFlow: Spatially Smooth Optical Flow for Video Stabilization”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2014. [[webpage](#)]
49. **Shuaicheng Liu**, Yinting Wang, Lu Yuan, Jiajun Bu, Ping Tan, Jian Sun, “Video Stabilization with a Depth Camera”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2014. [[webpage](#)]
50. **Shuaicheng Liu**, Michael S. Brown, Seon Joo Kim, Yu-Wing Tai, “Colorization for Single Image Super Resolution”, European Conference on Computer Vision (**ECCV**), 2010. [[webpage](#)]
51. Yu-Wing Tai, **Shuaicheng Liu**, Michael S. Brown, Stephen Lin, “Super Resolution using Edge Prior and Single Image Detail Synthesis”, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2010. [[webpage](#)]

---

## PATENTS

52. Jue Wang, Sunghyun Cho, Dun-Yu Hsiao, **Shuaicheng Liu**, “Joint Video Deblurring and Stabilization”, U.S. Patent No. 9,224,194. 2015.
53. Jue Wang, Sunghyun Cho, **Shuaicheng Liu**, “Simulating Tracking Shots from Image Sequences”, U.S. Patent No. 9,253,415. 2016

---

## HONORS AND AWARDS

- New Trends in Image Restoration and Enhancement (NTIRE): High Dynamic Range Challenge, Winner, 2021
- New Trends in Image Restoration and Enhancement (NTIRE): Burst Super Resolution Real, Winner, 2021
- New Trends in Image Restoration and Enhancement (NTIRE): Burst Super Resolution Synthetic, Runner up, 2021
- Mobile AI Challenges (MAI) - Smartphone Image Denoising, Runner up, 2021

---

## TALKS

- **Image Registration and its Applications.** [[link](#)] Online  
2019  
*Online talk, invited by Jiangmen*
- **Meshflow and its Applications** 2018  
*Invited talk, University of Electronic Science and Technology of China*
- **Video Stabilization and Beyond** 2016  
*Invited talk, University of Electronic Science and Technology of China*
- **Digital Video Stabilization and its Applications** 2014  
*Invited talk, Graduate School at Shenzhen, Tsinghua University*

## PROFESSIONAL SERVICES

---

- Senior Program Committee, AAAI 2022
- Associate Editor, International Conference on Intelligent Robots and Systems (IROS) 2021
- Session Chair, ACM Multimedia 2021, Doctoral Symposium track
- Local Chair, Visual Communication and Image Processing (VCIP), Chengdu, 2016
- Session Chair, International Conference on Image Processing (ICIP), Beijing, 2017.
- Program Committee, Pacific Graphics, 2018, 2020
- Conference Reviewer: CVPR, ICCV, ECCV, SIGGRAPH, SIGGRAPH Asia, ICIP, ACM Multimedia
- Journal Reviewer: IEEE Transactions on Pattern Analysis and Machine Intelligence, ACM Transactions on Graphics, International Journal of Computer Vision, IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Visualization and Computer Graphics, IEEE Signal Processing Letters, Computer Graphics Forum, Computer Vision and Image Understanding, Machine Vision and Application

## TEACHING

---

- “Signals and Systems”, undergraduate course, 2015 ~ 2021
- “Academic Writing”, graduate course, 2019 ~ 2021

## STUDENTS ADVISING

---

- Current PhD Students:
  - Ru Li, (Co-Advised with Prof. Guanghui Liu)
  - Ming Zhang, (Co-Advised with Prof. Bing Zeng)
- Graduated PhD Students:
  - Tiecheng Sun, (2021, Co-Advised with Prof. Guangliu Liu, Now a PostDoc at Chinese Academy of Sciences)
  - Yinglong Wang, (2020, Co-Advised with Prof. Bing Zeng, Now at Huawei Noah Laboratory)
- Current Master Students:
  - Cai Chen(2022)
  - Cheng Zhang(2022)
  - Ziqi Li(2023)
  - Liangtong Lu(2023)
  - Yuling Yang(2023)
  - Yuqiang Yang(2023)
  - Jia Liu(2024)
  - Zhuofan Zhang(2024)
  - Xuelan Yang(2024)
- Previous Master Students:
  - Chao Feng(2022, now a master student at UCSD)
  - Lei Yu(2020, now at Tencent)
  - Guoqiang Yang(2020, now at Bytebance)
  - Siqi Wan(2020, now at State Grid Corporation of China, Fuzhou)
  - Jiaxiong Qiu(2019, now a PhD student at Tianjin University)
  - Xuan Deng(2019, now at OPPO)
  - Peng Dai(2019, now a PhD student at HongKong University)
  - Zhiwei He(2018, now at Alibaba)
  - Heng Guo(2017, now a PhD student at Osaka University)
- Previous Undergraduate Students:
  - Tong He(now a Ph.D at UCLA, US.)
  - Feitong Tan(now a PhD at SFU, Canada, CA.)
  - Zhihang Ren(now a Ph.D at UC Berkeley, US.)
  - Xingdi Zhang(now a Ph.D student at KAUST, Dubai)
  - Binhan Xu(now a master student at UCSD, US.)