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Short Bio

Dr. Lu Sheng is an **Associate Professor** (since 2019) at the College of Software in Beihang University (BUAA), Beijing, China. Previously, he was a postdoctoral researcher (2017-2019) in **MMLab@CUHK**, with **Prof. Xiaogang Wang**.

He received his Ph.D. (2011-2016) at the Department of Electronic Engineering in the Chinese University of Hong Kong (CUHK), advised by **Prof. King Ngi Ngan**. He also has an internship (2015-2016) in Nanyang Technological University (NTU), with **Prof. Jianfei Cai**.

Research Interests

His research interests include Computer Vision, Machine Learning and Multimedia, aiming at endowing machines with the capability to *perceive*, *understand*, *reconstruct*, and *interact* with the **3D visual world**, with the following focuses recently:

- Data-driven models for extracting hierarchical 3D semantics, inferring semantical/geometrical relationships, and rendering high-fidelity 2D/3D contents, based on multi-modal signals (including 2D/3D vision, language, etc) and beyond.

Experience

- 2019–current **Associate Professor**, *College of Software, Beihang University*, Beijing, China.
- 2016–2019 **Postdoctoral Researcher**, *Image and Video Processing Laboratory, Department of Electronic Engineering, The Chinese University of Hong Kong*, Hong Kong, China.
 - Topic: Deep Learning Driven Low-level and Middle-level Computer Vision
 - Supervisor: Prof. Xiaogang Wang
- 2015–2016 **Visiting Research Assistant**, *BeingThere Centre, Institute for Media Innovation, Nanyang Technological University*, Singapore.
 - Topic: Real-time Depth-based Unconstrained Facial Pose and Expression Tracking in the Wild
 - Supervisor: Prof. Jianfei Cai

Education

- 2011–2016 **Mphil-Ph.D Degree**, *Image and Video Processing Laboratory, Department of Electronic Engineering, the Chinese University of Hong Kong*, Hong Kong, China.
 - Topic: RGB-D Video Processing – Enhancement and Applications
 - Supervisor: Prof. King Ngi Ngan
- 2007–2011 **B.E. Degree**, *Department of Information Science and Electronic Engineering, Zhejiang University*, Hangzhou, China.

Publications

* indicates equal contributions

indicates the corresponding author

JOURNALS

- [J-9] R. Su, D. Xu, **L. Sheng**, Wanli Ouyang, “PCG-TAL: Progressive Cross-granularity Cooperation for Temporal Action Localization”, in *IEEE Transactions on Image Processing (TIP)*, vol.30, pp.2103-2113, Dec. 2020.
- [J-8] C. H. Cheung, **L. Sheng**, K. N. Ngan, “Motion Compensated Virtual View Synthesis Using Novel Particle Cell”, in *IEEE Transactions on Multimedia (TMM)*, vol.23, pp.1908-1923, June 2020.

- [J-7] **L. Sheng***, J. Pan*, J. Guo, J. Shao, C.-C. Loy, “High-quality Video Generation from Static Structural Annotations”, in *International Journal of Computer Vision (IJCV)*, vol.128, pp.2552-2569, May 2020.
- [J-6] **L. Sheng**, J. Cai, T.-J. Cham, V. Pavlovic, K. N. Ngan, “Visibility-constrained Generative Model for Robust 3D Facial Pose Tracking”, in *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol.41, no.8, pp.1994-2007, Aug. 2019.
- [J-5] B. Dong, **L. Sheng**, “Bags of Tricks for Learning Depth and Camera Motion from Monocular Videos”, *Virtual Reality & Intelligent Hardware (VRIH)*, vol.1, no.5, pp.500-510, 2019.
- [J-4] F. Wu, S. Li, T. Zhao, K. N. Ngan, **L. Sheng**, “Cascaded Regression using Landmark Displacement for 3D Face Reconstruction”, in *Pattern Recognition Letters (PRL)*, vol.125, pp.766-772, 2019.
- [J-3] C. H. Cheung, K. N. Ngan, **L. Sheng**, “Spatio-Temporal Disocclusion Filling Using Novel Sprite Cells”, in *IEEE Transactions on Multimedia (TMM)*, vol.20, no.6, pp.1376-1391, Nov. 2017.
- [J-2] S. Li, K. N. Ngan, R. Paramesran and **L. Sheng**, “Real-time Head Pose Tracking with Online Face Template Reconstruction”, in *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol.38, no.9, pp.1922-1928, Sept. 2016.
- [J-1] **L. Sheng**, K. N. Ngan, C.-L. Lim and S. Li, “Online Temporally Consistent Indoor Depth Video Enhancement via Static Structure”, in *IEEE Transactions on Image Processing (TIP)*, vol.24, no.7, pp.2197-2211, July 2015.

CONFERENCES

- [C-29] G. Liu, Y. Rong, **L. Sheng#**, “VoteHMR: Occlusion-Aware Voting Network for Robust 3D Human Mesh Recovery from Partial Point Clouds”, in *ACM Multimedia (ACM MM)*, **Oral Presentation**, 2021.
- [C-28] X. Wu*, Z. Hu*, **L. Sheng#**, D. Xu, “StyleFormer: Real-time Arbitrary Style Transfer via Parametric Style Composition”, in *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021.
- [C-27] L. Zhao*, D. Cai*, **L. Sheng#**, D. Xu, “3DVG-Transformer: Relation Modeling for Visual Grounding on Point Clouds”, in *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021.
- [C-26] Y. He*, B. Gan*, S. Chen*, Y. Zhou*, G. Yin, L. Song, **L. Sheng**, J. Shao, Z. Liu, “ForgeryNet: A Versatile Benchmark for Comprehensive Forgery Analysis”, in *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, **Oral Presentation**, 2021.
- [C-25] B. Cheng, **L. Sheng#**, S. Shi, M. Yang, D. Xu, “Back-tracing Representative Points for Voting-based 3D Object Detection in Point Clouds”, in *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- [C-24] Y. Yang, **L. Sheng#**, X. Jiang, H. Wang, D. Xu, X. Cao, “IncreACO: Incrementally Learned Automatic Check-out with Photorealistic Exemplar Augmentation”, in *Winter Conference on Applications of Computer Vision (WACV)*, 2021.
- [C-23] Y. Qian, G. Yin, **L. Sheng#**, Z. Chen, Jing Shao, “Thinking in Frequency: Face Forgery Detection by Mining Frequency-Aware Clues”, in *European Conference on Computer Vision (ECCV)*, 2020.
- [C-22] R. Guo, C. Lin, C. Li, K. Tian, M. Sun, **L. Sheng#**, J. Yan, “Powering One-Shot Topological NAS with Stabilized Share-Parameter Proxy”, in *European Conference on Computer Vision (ECCV)*, 2020.
- [C-21] M. Liu, **L. Sheng**, S. Yang, J. Shao, S.-M. Hu, “Morphing and Sampling Network for Dense Point Cloud Completion”, in *AAAI Conference on Artificial Intelligence (AAAI)*, 2020.
- [C-20] **L. Sheng**, D. Xu, W. Ouyang, X. Wang, “Unsupervised Collaborative Learning of Keyframe Detection and Visual Odometry towards Monocular Deep SLAM”, in *IEEE International Conference in Computer Vision (ICCV)*, 2019.
- [C-19] C. Tang, **L. Sheng**, Z.-X. Zhang, X. Hu, “Improving Pedestrian Attribute Recognition with Weakly-Supervised Multi-scale Attribute-Specific Localization”, in *IEEE International Conference in Computer Vision (ICCV)*, 2019.
- [C-18] Z. Wang, X. Liu, H. Li, **L. Sheng**, J. Yan, X. Wang, J. Shao, “CAMP: Cross-modal Adaptive Message Passing for Text-image Retrieval”, in *IEEE International Conference in Computer Vision (ICCV)*, 2019.
- [C-17] G. Yin, B. Liu, **L. Sheng#**, N. Yu, X. Wang, J. Shao, “Semantics Disentangling for Text-to-Image Generation”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, **Oral Presentation**, 2019.

- [C-16] G. Yin, **L. Sheng**, B. Liu, N. Yu, X. Wang, J. Shao, “Context and Attribute Grounded Dense Captioning”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
- [C-15] J. Pan, C. Wang, X. Jia, J. Shao, **L. Sheng**[#], J. Yan, X. Wang, “Video Generation from Single Semantic Label Map”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
- [C-14] B. Li, W. Ouyang, **L. Sheng**, X. Zeng, X. Wang, “GS3D: An Efficient 3D Object Detection Framework for Autonomous Driving”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
- [C-13] Y. Liu, **L. Sheng**, J. Shao, J. Yan, S. Xiang, C. Pan, “Multi-Label Image Classification via Knowledge Distillation from Weakly-Supervised Detection”, in *ACM Multimedia (ACM MM)*, 2018.
- [C-12] G. Yin, **L. Sheng**, B. Liu, N. Yu, X. Wang, J. Shao, C-C. Loy, “Zoom-Net: Mining Deep Feature Interactions for Visual Relationship Recognition”, in *European Conference on Computer Vision (ECCV)*, 2018.
- [C-11] **L. Sheng**, Z. Lin, J. Shao, X. Wang, “Avatar-Net: Multi-scale Zero-shot Style Transfer by Feature Decoration”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [C-10] Y. Liu^{*}, F. Wei^{*}, J. Shao^{*}, **L. Sheng**, J. Yan, X. Wang, “Exploring Disentangled Feature Representation Beyond Face Identification”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [C-9] S. Sun, Z. Kuang, **L. Sheng**, W. Ouyang, W. Zhang, “Optical Flow Guided Feature: A Fast and Robust Motion Representation for Video Action Recognition”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [C-8] X. Liu, H. Zhao, M. Tian, **L. Sheng**, J. Shao, S. Yi, J. Yan, X. Wang, “HydraPlus-Net: Attentive Deep Features For Pedestrian Analysis”, in *IEEE International Conference on Computer Vision (ICCV)*, 2017.
- [C-7] **L. Sheng**, J. Cai, T-J. Cham, V. Pavlovic, K. N. Ngan, “A Generative Model for Depth-based Robust 3D Facial Pose Tracking”, in *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.
- [C-6] C. H. Cheung, **L. Sheng** and K. N. Ngan, “A disocclusion filling method using multiple sprites with depth for virtual view synthesis”, in *IEEE International Conference on Multimedia and Expo Workshop (ICMEW)*, 2015.
- [C-5] **L. Sheng**, K. N. Ngan and T-W. Hui, “Accelerating the Distribution Estimation for the Weighted Median/Mode Filters”, in *Asian Conference on Computer Vision (ACCV)*, 2014.
- [C-4] **L. Sheng**, K. N. Ngan and S. Li, “Temporal Depth Video Enhancement Based On Intrinsic Static Structure”, in *IEEE International Conference on Image Processing (ICIP)*, **Oral Presentation**, 2014.
- [C-3] S. Li, K. N. Ngan and **L. Sheng**, “Screen-camera Calibration Using a Thread”, in *IEEE International Conference On Image Processing (ICIP)*, 2014.
- [C-2] **L. Sheng**, K. N. Ngan and S. Li, “Depth Enhancement Based On Hybrid Geometric Hole Filling Strategy”, in *IEEE International Conference on Image Processing (ICIP)*, 2013.
- [C-1] S. Li, K. N. Ngan and **L. Sheng**, “A Head Pose Tracking System Using RGB-D Camera”, *International Conference on Computer Vision Systems (ICVS)*, **Oral Presentation**, 2013.

Professional Services

- **Executive Area Chair** of Vision and Learning SEminar (VALSE), 2020, 2021.
- **Technical Committee Member** on 3D Vision, China Society of Image and Graphics (CSIG), 2021.
- **Senior Program Committee (SPC)** or Area Chair of
 - International Joint Conference on Artificial Intelligence (IJCAI), 2021, 2022
 - AAAI Conference on Artificial Intelligence (AAAI), 2022
 - ACM Multimedia Asia, 2021
- **Journal reviewer** of
 - IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)
 - International Journal on Computer Vision (IJCV)
 - IEEE Transactions on Image Processing (T-IP)
 - IEEE Transactions on Multimedia (T-MM)
 - IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)
 - and etc.
- **Conference reviewer** of
 - IEEE International Conference on Computer Vision (ICCV)
 - IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
 - European Conference on Computer Vision (ECCV)
 - International Conference of Machine Learning (ICML)
 - AAAI Conference on Artificial Intelligence (AAAI)
 - Neural Information Processing Systems (NeurIPS)
 - International Joint Conference on Artificial Intelligence (IJCAI)
 - and etc.
- **Member:** IEEE/CVF, AAAI, CCF/CSIG/CAAI and etc.