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About Me

Short Bio. Dr. Lu Sheng the Associate Professor (since 2019) at the School 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.

Other Info. **Lu Sheng** refers to **盛律** in Chinese characters, while **律** may also be rendered as **Lü**, **Lv** or **Lyu** in English in different circumstances.

Experience

Since 2019 **Associate Professor**, *School of Software, Beihang University*, Beijing, China.

2017 - 2019 **Postdoctoral Researcher**, *Multimedia Laboratory (MMLab), The Chinese University of Hong Kong*, Hong Kong, China, with Prof. Xiaogang Wang.

2015 - 2016 **Research Assistant**, *BeingThere Centre, Institute for Media Innovation, Nanyang Technological University*, Singapore, with Prof. Jianfei Cai.

Education

2011 -2017 **Mphil-Ph.D Degree**, *Department of Electronic Engineering, The Chinese University of Hong Kong*, Hong Kong, China, Supervised by Prof. King Ngi Ngan.

2007 - 2011 **B.E. Degree**, *Department of Information Science and Electronic Engineering, Zhejiang University*, Hangzhou, China.

Publications

- Publication listed in reverse chronological order.
- * indicates equal contributions, # indicates the corresponding author

Journals

[J-12] K. Wang, **L. Sheng**, S. Gu, D. Xu, "VPU: A Video-based Point Cloud Upsampling Framework", *in IEEE Transactions on Image Processing* (**TIP**), vol.31, pp.4062-4075, April 2022.

[J-11] K. Wang, **L. Sheng**, S. Gu, D. Xu, Sequential Point Cloud Upsampling by Exploiting Multi-Scale Temporal Dependency, *in IEEE Transactions on Circuits and Systems for Video Technology* (**TCSVT**), vol.31, issue 12, pp.4686-4696, Dec. 2021.

[J-10] L. Zhao*, J. Guo*, D. Xu, **L. Sheng**, "Transformer3D-Det: Improving 3D Object Detection by Vote Refinement", *in IEEE Transactions on Circuits and Systems for Video Technology* (**TCSVT**), vol.31, issue 12, pp.4735-4746, Dec. 2021.

[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-34] Z. Wang*, X. Huo*, Z. Chen, J. Zhang, **L. Sheng**#, D. Xu, "Improving RGB-D Point Cloud Registration by Learning Multi-scale Local Linear Transformation", *in European Conference on Computer Vision* (**ECCV**), 2022.

[C-33] C. Gao, Q. Yu#, **L. Sheng**, Y.-Z. Song, D. Xu, "SketchSampler: Sketch-based 3D Reconstruction via View-dependent Depth Sampling", *in European Conference on Computer Vision* (**ECCV**), 2022.

[C-32] Y. He, G. Huang, S. Chen, J. Teng, K. Wang, Z. Yin, **L. Sheng**, Z. Liu, Y. Qiao, J. Shao, "X-Learner: Learning Cross Sources and Tasks for Universal Visual Representation", *in European Conference on Computer Vision* (**ECCV**), 2022.

[C-31] D. Cai*, L. Zhao*, J. Zhang#, **L. Sheng**, D. Xu, "3DJCG: A Unfied Framework for Joint Dense Captioning and Visual Grounding on 3D Point Clouds", *in IEEE/CVF Conference on Computer Vision and Pattern Recognition* (**CVPR**), **Oral Presentation**, 2022.

[C-30] B. Li, Y. Zhao, Z. Shi, **L. Sheng**#, "DanceFormer: Music Conditioned 3D Dance Generation with Parametric Motion Transformer", *in AAAI Conference on Artificial Intelligence* (**AAAI**), 2022.

[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 Pedestrain 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.

Courses

Postgraduate

Fall **Machine Learning**, *School of Software, Beihang University*.

Undergraduate

Spring **Image Processing and Computer Vision**, *School of Software, Beihang University*.

Professional Services

- **Executive Area Chair** of Vision and Learning SEminar (VALSE), 2020, 2021, 2022.
- **Technical Commitee Member** on 3D Vision, China Society of Image and Graphics (CSIG).
- **Organizer** of
  - The 3rd Workshop on Sensing, Understanding and Synthesizing Humans, ICCV 2021.
  - The ForgeryNet Challenge, ICCV 2021.
- **Senior Program Commitee (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.