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EDUCATION

Nanjing University Nanjing, China
Ph.D. in Information and Communication Engineering 09/2017 - 06/2023

Nanjing University Nanjing, China
B.S. in Electronic Information Science and Engineering 09/2012 - 06/2016

EXPERIENCE

Nanjing University Nanjing, China
Associate Researcher, School of Electronic Science and Engineering 09/2023 - Present

PUBLICATIONS

(# Co-first Author, * Corresponding Author)

Journals

- Y. Kong, **M. Lu***, and Z. Ma, "Generative Refinement for Low Bitrate Image Coding Using Vector Quantized Residual", *IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS)*, vol. 14, no. 2, pp. 185 - 197, Jun. 2024.
- Z. Li, **M. Lu**, X. Zhang, X. Feng*, M S. Asif, and Z. Ma*, "Efficient Visual Computing with Camera RAW Snapshots", *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 46, no. 7, pp. 4684-4701, Jan. 2024. (CCF-A, IF=20.8)
- J. Shi#, **M. Lu#**, and Z. Ma*, "Rate-Distortion Optimized Post-Training Quantization for Learned Image Compression", *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 34, no. 5, pp. 3082-3095, May 2024.
- Z. Duan#*, **M. Lu#**, J. Ma, Y. Huang, Z. Ma, and F. Zhu, "QARV: Quantization-Aware ResNet VAE for Lossy Image Compression", *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 46, no. 1, pp. 436-450, Jan. 2024. (CCF-A, IF=20.8)
- **M. Lu**, T. Chen, Z. Dai, D. Wang, D. Ding, and Z. Ma*, "Decoder-side Cross Resolution Synthesis for Video Compression Enhancement", *IEEE Transactions on Multimedia (TMM)*, vol. 25, pp. 2097-2110, Jun. 2023.
- H. Liu, **M. Lu**, Z. Chen, X. Cao, Z. Ma*, and Y. Wang, "End-to-end Neural Video Coding Using a Compound Spatiotemporal Representation," *IEEE Transactions Circuits and Systems for Video Technology (TCSVT)*, vol. 32, no. 8, pp. 5650-5662, Jan. 2022.
- W. Hong, T. Chen, **M. Lu**, S. Pu, and Z. Ma*, "Efficient neural image decoding via fixed-point inference", *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 31, no. 9, pp. 3618-3630, Sept. 2021.
- H. Liu, **M. Lu**, Z. Ma*, F. Wang, Z. Xie, X. Cao*, and Y. Wang, "Neural Video Coding using Multiscale Motion Compensation and Spatiotemporal Context Model", *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, vol. 31, no. 8, pp. 3182-3196, Aug. 2021.
- H. Chen#, **M. Lu#**, Z. Ma*, X. Zhang, Y. Xu*, Q. Shen, and W. Zhang, "Learned Resolution Scaling Powered Gaming-as-a-Service at Scale", *IEEE Transactions on Multimedia (TMM)*, vol. 23, pp. 584-596, Apr. 2020.

Conferences

- J. Shi, M. Jiang, **M. Lu***, T. Chen, X. Cao, and Z. Ma, "HINER: Neural Representation for Hyperspectral Image", *ACM International Conference on Multimedia (ACM MM)*, in Melbourne, Australia, Oct. 2024. (CCF-A)
- Z. Duan, **M. Lu**, J. Yang, J. He*, Z. Ma, and F. Zhu, "Towards Backward-Compatible Continual Learning of Image Compression", *The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, in Seattle WA, USA, Jun. 2024. (CCF-A)
- H. Sha, **M. Lu***, and Z. Ma, "Lossless JPEG Recompression for Similar Images via Frequency Domain Block Matching", *Picture Coding Symposium (PCS)*, in Taichung, Taiwan, China, Jun. 2024.

- M. Dong, **M. Lu***, and Z. Ma, "Accelerating Block-level Rate Control for Learned Image Compression," IEEE Data Compression Conference (DCC), in Snow Bird, Utah, USA, Mar. 2024.
- **M. Lu**, Z. Duan, F. Zhu, and Z. Ma*, "Deep Hierarchical Video Compression", AAAI Conference on Artificial Intelligence (AAAI), in Vancouver, Canada, Feb. 2024. (CCF-A)
- Y. Zhang, Z. Duan, **M. Lu**, D. Ding*, F. Zhu, and Z. Ma, "Another Way to the Top: Exploit Contextual Clustering in Learned Image Coding", AAAI Conference on Artificial Intelligence (AAAI), in Vancouver, Canada, Feb. 2024. (CCF-A)
- M. Dong, H. Sha, **M. Lu***, and Z. Ma, "ULIC: Ultra Lightweight Image Coder on Wearable Devices," The 20th International Forum of Digital Multimedia Communication (IFTC), in Beijing, China, Dec. 2023. (Best Paper)
- G. Wei, T. Zhang, **M. Lu**, X. Wang, and H. Chen, "Cloud Game Video Coding Based On Human Eye Fixation Point", IEEE 25th International Workshop on Multimedia Signal Processing (MMSP), in Poitiers, France, Oct. 2023.
- C. Zhang, **M. Lu***, Y. Li*, and Z. Ma, "Recurrent Information Synthesis for Down-Sampling Based Video Coding", IEEE 25th International Workshop on Multimedia Signal Processing (MMSP), in Poitiers, France, Oct. 2023.
- Z. Duan, **M. Lu**, Z. Ma, and F. Zhu, "Lossy Image Compression with Hierarchical VAEs", IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), in Waikoloa, Hawaii, Jan. 2023. (Best Paper - Algorithms)
- X. Wang, **M. Lu**, and Z. Ma, "Block-level rate control for learnt image coding", Picture Coding Symposium (PCS), in San Jose, California, USA, Dec. 2022.
- Z. Duan, **M. Lu**, Z. Ma, and F. Zhu, "Opening the black box of learned image coders", Picture Coding Symposium (PCS), in San Jose, California, USA, Dec. 2022.
- Z. Chen, **M. Lu**, H. Chen*, and Z. Ma*, "Robust Ultralow Bitrate Video Conferencing with Second Order Motion Coherency", IEEE 24th International Workshop on Multimedia Signal Processing (MMSP), in Shanghai, China, Sept. 2022.
- **M. Lu**, P. Guo, H. Shi, C. Cao, and Z. Ma, "Transformer-based Image Compression", IEEE Data Compression Conference (DCC), in Snow Bird, Utah, USA, Mar. 2022.
- H. Liu, S. Han, L. Huang, **M. Lu**, T. Chen, Z. Ma*, "Learned Video Compression via Joint Spatial-Temporal Correlation Exploration", AAAI Conference on Artificial Intelligence (AAAI), in New York, New York, USA, Feb. 2020. (CCF-A, Poster Spotlight)
- **M. Lu**, M. Cheng, Y. Xu, S. Pu, Q. Shen*, and Z. Ma*, "Learned Quality Enhancement via Multi-Frame Priors for HEVC Compliant Low-Delay Applications", IEEE International Conference on Image Processing (ICIP), in Taipei, Taiwan, China, Sept. 2019. (Top 10% Papers)
- **M. Lu**, T. Chen, H. Liu, and Z. Ma, "Learned Image Restoration for VVC Intra Coding", IEEE CVPR Workshop and Challenge on Learned Image Compression (CLIC), in Long Beach, CA, Jun. 2019.

HONORS AND AWARDS

- Huawei Spark Award, 2024.
- The 20th International Forum of Digital Multimedia Communication, Best Paper Award, 2023.
- IEEE Winter Conference on Applications of Computer Vision, Best Paper - Algorithms, 2023.
- IEEE VCIP Learnt Image Coding Challenge - Speed Track 3rd Prize, 2022.
- IEEE MMSP Grand Challenge, Best Performing Image Coding Solution, 2020.
- IEEE International Conference on Image Processing, Top 10% Papers, 2019.
- ACM SIGCOMM Student Research Competition, Finalist, 2018.

SERVICE

I am/was invited reviewer for the following journals:

- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Multimedia (TMM)
- IEEE Open Journal of Circuits and Systems (OJCAS)
- MDPI Algorithms

I am/was invited reviewer for the following conferences:

- IEEE International Workshop on Multimedia Signal Processing (MMSP), 2024
- IEEE International Conference on Multimedia and Expo (ICME), 2023