

# MING LU (陆明)

minglu@nju.edu.cn | 159-0519-5868 | GitHub | Google Scholar  
No.163 Xianlin Road, Qixia District, Nanjing, Jiangsu, China

## EDUCATION

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<b>Nanjing University</b> <i>Ph.D.</i> in Information and Communication Engineering	Nanjing, Jiangsu, China 09/2017 - 06/2023
<b>Nanjing University</b> <i>B.S.</i> in Electronic Information Science and Engineering	Nanjing, Jiangsu, China 09/2012 - 06/2016

## EXPERIENCE

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<b>Nanjing University</b> Associate Researcher, School of Electronic Science and Engineering	Nanjing, Jiangsu, China 09/2023 - Present
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## PUBLICATIONS

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(# Co-first Author, \* Corresponding Author)

### Journals

- J. Shi#, Q. Zhang#, **M. Lu\***, and Z. Ma\*, "Compression as Restoration: A Unified Implicit Approach to Self-Supervised Hyperspectral Image Representation", *IEEE Journal of Selected Topics in Signal Processing (JSTSP)*, Nov. 2025.
- 陆明, 丛吾洋, 黄建凯, 石峻奇, 马展\*, "面向视频压缩后向兼容的连续学习", *计算机学报*, Oct. 2025.
- 宋赛, 崔昭, 詹尹僧, 杨进祯, 陆明\*, 田静, "面向深度神经网络图像压缩的高性能算术编码硬件设计", *电子与信息学报*, Sept. 2025.
- 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.
- 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. 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.
- 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.
- **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

- W. Cong, J. Shi, L. Wang, W. Shi, **M. Lu\***, H. Chen, and Z. Ma\*, "Reinforced Rate Control for Neural Video Compression via Inter-Frame Rate-Distortion Awareness", *The 40th Annual AAAI Conference on Artificial Intelligence (AAAI)*, in Singapore, Jan. 2026.

- Y. Liu, D. Jin, S. Huo\*, J. Gu, C. Zhou, H. Bai, **M. Lu\***, and Z. Ma, "Neural B-frame Video Compression with Bi-directional Reference Harmonization", The Thirty-Ninth Annual Conference on Neural Information Processing Systems (NeurIPS), in San Diego Convention Center, USA, Dec. 2025.
- A. Ke, X. Zhang, T. Chen\*, **M. Lu**, C. Zhou, J. Gu, Z. Ma, "Ultra Lowrate Image Compression with Semantic Residual Coding and Compression-aware Diffusion", IEEE International Conference on Machine Learning (ICML), in Vancouver, Canada, Jul. 2025.
- X. Zhang, **M. Lu\***, Y. Chen, and Z. Ma, "Perception-Oriented Latent Coding for High-Performance Compressed Domain Semantic Inference", IEEE International Conference on Multimedia and Expo (ICME), in Nantes, France, Jun. 2025. (Oral)
- J. Shi, Z. Chen, H. Li, Q. Zhao, **M. Lu\***, T. Chen, and Z. Ma, "On Quantizing Neural Representation for Variable-Rate Video Coding", The Thirteenth International Conference on Learning Representations (ICLR), in Singapore, Apr. 2025. (Spotlight)
- W. Cong, Y. Kong, **M. Lu\***, L. Wang, W. Shi, and Z. Ma, "Integrating Adaptive Sampling for Optimal Learned Video Compression", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), in Hyderabad, India, Apr. 2025. (Oral)
- B. Gu, H. Chen\*, **M. Lu**, J. Yao, and Z. Ma, "Adaptive Rate Control for Deep Video Compression with Rate-Distortion Prediction", Data Compression Conference (DCC), in Snowbird, Utah, USA, Mar. 2025. (Oral)
- H. Sha, M. Dong, Q. Luo, **M. Lu\***, H. Chen, and Z. Ma, "Towards Loss-Resilient Image Coding for Unstable Satellite Networks", The 39th Annual AAAI Conference on Artificial Intelligence (AAAI), in Philadelphia, Pennsylvania, USA, Feb. 2025. (Oral)
- X. Zhang, P. Guo, **M. Lu\***, and Z. Ma, "All-in-One Image Coding for Joint Human-Machine Vision with Multi-Path Aggregation", The Thirty-Eighth Annual Conference on Neural Information Processing Systems (NeurIPS), in Vancouver, Canada, Dec. 2024.
- J. Shi, M. Jiang, **M. Lu\***, T. Chen, X. Cao, and Z. Ma, "HINER: Neural Representation for Hyperspectral Image", The 32nd ACM International Conference on Multimedia (ACM MM), in Melbourne, Australia, Oct. 2024.
- 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.
- 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 Snowbird, Utah, USA, Mar. 2024.
- **M. Lu**, Z. Duan, F. Zhu, and Z. Ma\*, "Deep Hierarchical Video Compression", The 38th Annual AAAI Conference on Artificial Intelligence (AAAI), in Vancouver, Canada, Feb. 2024.
- 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", The 38th Annual AAAI Conference on Artificial Intelligence (AAAI), in Vancouver, Canada, Feb. 2024.
- 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. (Oral, 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. (Oral, 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 Snowbird, 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”, The 34th Annual AAAI Conference on Artificial Intelligence (AAAI), in New York, New York, USA, Feb. 2020. (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

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- ChinaMM最佳论文奖, 2025
- 华为公司优秀技术合作项目奖, 2024
- 华为火花奖, 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

## TALKS

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- [08/2024] 深度层级视频编码技术研究, 全国通信理论与技术学术会议-多媒体通信与信息服务论坛
- [05/2024] Deep Hierarchical Video Compression, 中国图象图形学学会“东湖论坛”前沿论文分享会

## SERVICE

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I am/was invited reviewer for the following journals:

- IEEE Transactions on Image Processing (TIP)
- 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 Journal of Selected Topics in Signal Processing (JSTSP)
- IEEE Open Journal of Circuits and Systems (OJCAS)
- IEEE Signal Processing Letters (SPL)
- IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI)
- ISPRS Journal of Photogrammetry and Remote Sensing
- Multimedia Systems
- Signal Processing
- Neural Networks
- MDPI Algorithms
- MDPI Sensors

I am/was invited reviewer for the following conferences:

- Annual AAAI Conference on Artificial Intelligence (AAAI)
- Annual Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Learning Representations (ICLR)
- International Conference on Machine Learning (ICML)
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
- IEEE International Conference on Multimedia and Expo (ICME)
- IEEE International Symposium on Circuits and Systems (ISCAS)
- IEEE International Workshop on Multimedia Signal Processing (MMSP)
- Picture Coding Symposium (PCS)