Shangquan SUN

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EDUCATION

University of Chinese Academy of Sciences Sept. 2021 - Jan. 2025
Ph.D. in Computer Science Advised by *Prof. Xiaochun Cao*

University of Michigan Sept. 2019 - Jun. 2021
M.S. in Data Science (Major GPA: 4.0/4.0)

Shanghai Jiao Tong University, UM - SJTU JI Sept. 2015 - Jun. 2019
B.S. in Electrical and Computer Engineering (Major GPA: 3.6/4.0)

AREAS OF INTEREST

Computer Vision, Low Level Vision, Efficient Machine Learning, Computer Science, Deep Learning

PUBLICATIONS

- ***Shangquan Sun****, Wenqi Ren, Juxiang Zhou, Shu Wang, Jianhou Gan, Xiaochun Cao.* "Semi-Supervised State-Space Model with Dynamic Stacking Filter for Real-World Video Deraining", 2025 The IEEE/CVF Computer Vision and Pattern Recognition Conference (**CVPR 2025 Oral, top 0.73%**).
- ***Shangquan Sun****, Wenqi Ren, Jingzhi Li, Rui Wang, Xiaochun Cao.* "Logit Standardization in Knowledge Distillation", 2024 The IEEE/CVF Computer Vision and Pattern Recognition Conference (**CVPR 2024 Highlight, top 2.81%**).
- ***Shangquan Sun****, Wenqi Ren, Xinwei Gao, Rui Wang, Xiaochun Cao.* "Restoring Images in Adverse Weather Conditions via Histogram Transformer", 2024 European Conference on Computer Vision (**ECCV 2024**).
- ***Shangquan Sun****, Wenqi Ren, Zikun Liu, Hyunhee Park, Rui Wang, Xiaochun Cao.* "EnsIR: An Ensemble Algorithm for Image Restoration via Gaussian Mixture Models", 2024 The annual Neural Information Processing Systems (**NeurIPS 2024**).
- ***Shangquan Sun****, Wenqi Ren, Tao Wang, Xiaochun Cao.* "Rethinking Image Restoration for Object Detection", 2022 The annual Neural Information Processing Systems (**NeurIPS 2022**).
- ***Shangquan Sun****, Wenqi Ren, Jingzhi Li, Kaihai Zhang, Meiyu Liang, Xiaochun Cao.* "Event-aware Video Dearning via Multi-Patch Progressive Learning", 2023 IEEE Transactions on Image Processing (**TIP 2023**).
- ***Shangquan Sun****, Wenqi Ren, Xiaochun Cao.* "Event Fusion-based Spatial Attentive and Temporal Memorable Network for Video Deraining." 2024 Ruan Jian Xue Bao/**Journal of Software** (CCF-T1).

PREPRINTS

- ***Shangquan Sun****, Wenqi Ren, Jingyang Peng, Fenglong Song, Xiaochun Cao.* "Di-retinex: Digital-imaging retinex theory for low-light image enhancement", 2023 (Accepted with Minor Revision in **IJCV**).
- ***Shangquan Sun****, Wenqi Ren, Juxiang Zhou, Jianhou Gan, Rui Wang, Xiaochun Cao.* "A hybrid transformer-mamba network for single image deraining", 2024 (Submitted to IEEE **TIP**).
- *Xinran Qin, Aiping Zhang, Ruoyu Chen,* ***Shangquan Sun****, Wenqi Ren, Xiaochun Cao.* "Customized Harmonization for Infrared and Visible Image Fusiong", 2025 (Submitted to **ACM MM**).

PATENTS

- A Student Network Training Method of Knowledge Distillation in Hybrid Learning, CN Patent Application CN117494-780A, filed August 2023.
- A Low-Quality Image Restoration Algorithm in Adverse Weather Based on Histogram Self-Attention Mechanism, CN Patent Application 2024105550213, filed October 2024.
- An Ensemble Learning Method for Image Restoration, CN Patent Application 2024114525032, filed November 2024.

ACADEMIC SERVICE

- Conference Reviewer: CVPR 2023/2024/2025, ICCV 2023/2025, ECCV 2024, NeurIPS 2024/2025, ICML 2025, ICLR 2025, AAAI 2025, AISTATS 2025.
- Journal Reviewer: TPAMI, IJCV, TIP, TNNLS, TCSVT, TMM, TASE, TOMM, Neurocomputing, NCAA.

TALKS

- "Restoring Images in Adverse Weather Conditions via Histogram Transformer", at AI Time, September 2024.
- "Logit Standardization in Knowledge Distillation", at AI Time, April 2024.
- "Image Restoration and its Application in Rainy Days", at Graduate Academic Forum of the Journal of Image and Graphics, November 2023.

SELECTED ACTIVITIES

Research Internship, *Huawei Technologies Co., Ltd.* Oct. 2022 - Apr. 2023
Worked with Dr. Tao Wang *Beijing, China*

- Conducted experiments on the acceleration and compression of the large language model, Pangu, and measured its model size, inference time, etc., under different configurations.

Research Assistant, *Chinese Academy of Sciences* Sept. 2021 - Sep. 2022
Worked with Prof. Wenqi Ren *Beijing, China*

- Developed a lightweight low-light image enhancement model capable of processing 4K images in real-time and improving downstream object detection in low-light conditions, successfully completing a project valued at 1,000,000 Yuan and receiving the prestigious Huawei "Spark Award".

Research Assistant, *Ross School of Business, University of Michigan* Sept. 2020 - Mar. 2021
Worked with Prof. Patrick Park *Ann Arbor, United States*

- Processed the Twitter Decahose dataset using PySpark, detecting corrupted data files, filtering Chinese and Japanese users, and selecting tweets from individuals potentially dismissed from work.

Chairman, *Honor Council at UM - SJTU JI* Jul. 2018 - Jul. 2019
Worked with Prof. Horst Hohberger *Shanghai, China*

- Enhanced academic integrity by investigating alleged Honor Code violations, including plagiarism and academic cheating, and collaborating with the Faculty Commission on Discipline to address these violations.

Teaching Assistant, *Probabilistic Methods in Engineering, UM - SJTU JI* May. 2018 - Aug. 2018
Worked with Prof. Horst Hohberger *Shanghai, China*

- Conducted weekly all-English recitation classes, while grading assignments and examination papers for 160 students.

Teaching Assistant, *Electromagnetic, UM - SJTU JI* May. 2018 - Dec. 2018
Worked with Prof. Abdelmadjid Mesli *Shanghai, China*

- Graded examination papers and quiz, and held all-English recitation and review classes weekly for 70 students.

MISCELLANEOUS

Honors	National scholarship, Ministry of Education (2024) Merit Student, Chinese Academy of Sciences (2023) Outstanding Presentation, Graduate Academic Forum of JIG (2023) Undergraduate Excellent Scholarship, Shanghai Jiao Tong University (2018) First Prize of China Odyssey of the Mind in China Division (2016) Outstanding Student Cadres, Shanghai Jiao Tong University (2016) Excellent Assistant Class Advisor, Shanghai Jiao Tong University (2017)
Computer Languages	C/C++, Python, MATLAB, Julia, Mathematica, SQL, Shell Script
Tools	PyTorch, LaTeX, SQLite, Origin, Xilinx, Vim, PCspim, PSPICE
Languages	Mandarin (Native speaker) English (TOEFL: 108/120, GRE: 324/340) Japanese (N2: 151/180)