Salman Siddique Khan

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ABOUT ME

I am a Postdoctoral Associate in the Department of Electrical and Computer Engineering, Rice University. My field of research is Computational Photography, Computer Vision and Deep Learning.

EDUCATION

Indian Institute of Technology Madras, India   **Jul. 2018 – Jul. 2023**

Ph.D., Electrical Engineering

- Advisor: Prof. Kaushik Mitra
- Thesis: Learning-based Scene Reconstruction, Design and Inference in Lensless Imaging

National Institute of Technology Rourkela, India   **Jul. 2014 – Jul. 2018**

B.Tech., Electronics and Instrumentation Engineering

- CGPA: 8.9/10

WORK EXPERIENCE

Rice University   **Aug. 2023 – Present**

Postdoctoral Associate   *Houston, TX*

I work with Prof. Ashok Veeraraghavan and Prof. Ashutosh Sabharwal. My research is on developing deep learning and computational photography tools for Digital Health.

NEC Labs America   **Jun. 2022 – Dec. 2022**

Research Intern   *San Jose, CA*

I worked in the Media Analytics team with Dr. Manmohan Chandraker and Dr. Francesco Pittaluga. I worked on using deep learning to design optical encryption cameras that can preserve the privacy of a scene optically.

Rice University   **May 2019 – Nov. 2019, Jan. 2021 – Jul. 2021**

Research Associate   *Houston, TX*

I worked in the Rice Computational Imaging Lab headed by Prof. Ashok Veeraraghavan. I worked on developing purely deep learning techniques to design optics for lensless cameras.

RESEARCH GRANTS AND AWARDS

- Awarded Government of India **Technology and Startup Funding** 2021-23 (TSF) to develop and commercialize Jointly Designed Optics and AI for 3D Endoscopic Imaging.
- Awarded the **Qualcomm Innovation Fellowship** India 2020-21 to develop Reconstruction, Design, and Inference Algorithms for Lensless Imaging.
- Awarded **Google Travel Grant** to attend ICCV 2019 at Seoul, South Korea.

PUBLICATIONS

Journal Publications

- Bagadthey, D., Prabhu, S., **Khan, S. S.**, Fredrick, D. T., Boominathan, V., Veeraraghavan, A., & Mitra, K. (2022). "FlatNet3D: Intensity and absolute depth from single-shot lensless capture." **JOSA A**, 39(10), 1903-1912.
- **Khan, S. S.**, Sundar, V., Boominathan, V., Veeraraghavan, A., & Mitra, K. (2020). "FlatNet: Towards photorealistic scene reconstruction from lensless measurements." IEEE Transactions on Pattern Analysis and Machine Intelligence (**PAMI**), 44(4), 1934-1948.

Conference Proceedings

- Ghanekar, B., **Khan, S. S.**, Boominathan, V., Sharma, P., Singh, S., Mitra, K., & Veeraraghavan, A. (2024). "Passive Snapshot Coded Aperture Dual-Pixel RGB-D Imaging." In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**).
- **Khan, S. S.**, Boominathan, V., Veeraraghavan, A., & Mitra, K. (2023, July). "Designing Optics and Algorithm for Ultra-Thin, High-Speed Lensless Cameras." In 2023 IEEE International Conference on Multimedia and Expo (**ICME**) (pp. 1583-1588).
- Saha, A., **Khan, S. S.**, Sehrawat, S., Prabhu, S. S., Bhattacharya, S., & Mitra, K. (2022, October). "LWGNet-Learned Wirtinger Gradients for Fourier Ptychographic Phase Retrieval." In Proceedings of European Conference on Computer Vision (**ECCV**) (pp. 522-537).
- Tan, J., **Khan, S. S.**, Boominathan, V., Byrne, J., Baraniuk, R., Mitra, K., & Veeraraghavan, A. (2020, July). "Canopic: Pre-digital privacy-enhancing encodings for computer vision." In 2020 IEEE International Conference on Multimedia and Expo (**ICME**) (pp. 1-6).
- **Khan, S. S.**, Adarsh, V. R., Boominathan, V., Tan, J., Veeraraghavan, A., & Mitra, K. (2019). "Towards photorealistic reconstruction of highly multiplexed lensless images." In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**) (pp. 7860-7869).

Preprints

- **Khan, S. S.**, Yu, X., Mitra, K., Chandraker, M., & Pittaluga, F. (2023). "OpEnCam: Lensless Optical Encryption Camera." arXiv preprint arXiv:2312.01077.

PRESENTATIONS AND TALKS

- "Designing Optics and Algorithm for Ultra-Thin, High-Speed Lensless Cameras," *International Conference on Multimedia and Expo 2023*, Brisbane, Australia, July 2023.
- "LWGNet-Learned Wirtinger Gradients for Fourier Ptychographic Phase Retrieval," *International Conference on Computational Photography 2022*, Pasadena, California, August 2022.
- "Towards photorealistic reconstruction of highly multiplexed lensless images," *International Conference on Computer Vision 2019*, Seoul, South Korea, October 2019.

TEACHING EXPERIENCE

I served as a Teaching Assistant for the following courses at IIT Madras:

- **EE 5176 Computational Photography**: Spring 2019, 2021, 2022
- **EE 6132 Modern Computer Vision**: Fall 2020
- **EE 5180 Introduction to Machine Learning**: Spring 2023
- **EE 1101 Signals and Systems**: Spring 2020
- **EE 3110 Probability Foundations for Electrical Engineers**: Fall 2021

PROFESSIONAL SERVICES

I regularly serve as a reviewer for the following publications:
- IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- European Conference on Computer Vision (ECCV)
- IEEE Transactions on Computational Imaging (TCI)
- IEEE Open Journal of Signal Processing
- Optica Optics Express

SKILLS

- Programming Languages – Python, MATLAB, C++.
- Machine Learning Frameworks – PyTorch, Tensorflow, scikit-Learn.
- Fabrication Tools – Nanoscribe Photolithography
- Experience and knowledge in computer vision, image processing, machine learning, deep learning, computational imaging and solving inverse problems.