VIJAY RENGARAJAN ANGARAI PICHAIKUPPAN

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RESEARCH AREAS   Image processing, computer vision, and computational photography.

WORK EXPERIENCE

Facebook Reality Labs, Sunnyvale, USA   September 2021 – now
Research Scientist

Carnegie Mellon University, Pittsburgh, USA   December 2017 – September 2021
Research Scientist at ECE

Motorola India Private Ltd., Bengaluru, India   July 2008 – July 2011
Software Engineer

EDUCATION

Indian Institute of Technology Madras, Chennai, India   August 2011 – November 2017
Ph.D., Electrical Engineering
Guides: Prof. A.N.Rajagopalan and Prof. R. Aravind
CGPA: 9.41/10
Thesis: *Rolling Shutter Imaging: Registration and Rectification*

PSG College of Technology, Coimbatore, India   August 2004 – May 2008
Bachelor of Engineering, Electronics and Communication Engineering
CGPA: 9.48/10

PUBLICATIONS

1. [TOG2021-UnderReview] Aswin C. Sankaranarayanan, Vishwanath Saragadam, *Vijay Rengarajan*, Ryuichi Tadano, Tuo Zhuang, Hideki Oyaizu, and Jun Murayama. "Programmable Spectral Filter Arrays for Hyperspectral Imaging". Under review in ACM Transactions on Graphics (TOG) 2021. Preprint at https://arxiv.org/abs/2109.14450.

2. [ICCVW2021] Jeremy Klotz, *Vijay Rengarajan*, and Aswin C. Sankaranarayanan. "Fine-Grain Prediction of Strawberry Freshness using Subsurface Scattering" in Large-Scale Fine-Grained Food Analysis Workshop at ICCV 2021.

3. [CVPRW2020] *Vijay Rengarajan*, Shuo Zhao, Ruiwen Zhen, John Glotzbach, Hamid Sheikh, and Aswin C. Sankaranarayanan. "Photosequencing of Motion Blur using Short and Long Exposures," in New Trends in Image Restoration and Enhancement workshop at CVPR 2020 (oral presentation).

4. [ICIP2018] Nimisha T M, *Vijay Rengarajan*, and A.N. Rajagopalan. "Semi-supervised Learning of Camera Motion from a Blurred Image," in International Conference on Image Processing (**ICIP**), October 2018 (oral presentation).

5. [CVPR2017] *Vijay Rengarajan*, Yogesh Balaji, and A.N. Rajagopalan. "Unrolling the Shutter: CNN to Correct Motion Distortions," in International Conference on Computer Vision and Pattern Recognition (**CVPR**), July 2017 (oral presentation).

6. [TPAMI2017] *Vijay Rengarajan*, A.N. Rajagopalan, R. Aravind, and Guna Seetharaman. "Image Registration and Change Detection under Rolling Shutter Motion Blur," IEEE Transactions on Pattern Analysis and Machine Intelligence (**PAMI**), November 2016.

7. [ICIP2016] *Vijay Rengarajan*, Abhijith Punnappurath, and A.N. Rajagopalan. "Rolling Shutter Super-resolution in Burst Mode," in International Conference on Image Processing (**ICIP**), September 2016.

8. [CVPR2016] *Vijay Rengarajan*, A.N. Rajagopalan, and R. Aravind. "From Bows to Arrows: Single Image Rolling Shutter Rectification," in International Conference on Computer Vision and Pattern Recognition (**CVPR**), June 2016.

9. [ICCV2015] Abhijith Punnappurath, *Vijay Rengarajan*, and A.N. Rajagopalan. "Rolling Shutter Super-resolution," in the Proceedings of IEEE International Conference on Computer Vision (**ICCV**), December 2015.

10. [SPIE2015] *Vijay Rengarajan*, Sheetal B. Gupta, A.N. Rajagopalan, and Guna Seetharaman. "Illumination Robust Change Detection with CMOS Imaging Sensors," in **SPIE** Defense + Security Symposium, International Society for Optics and Photonics, April 2015 (oral presentation).

11. [ECCV2014] *Vijay Rengarajan*, A.N. Rajagopalan, and R. Aravind. "Change Detection in the Presence of Motion Blur and Rolling Shutter Effect," in European Conference on Computer Vision (**ECCV**), Springer International Publishing, September 2014.

12. [ICPR2014] *Vijay Rengarajan*, A.N. Rajagopalan, and R. Aravind. "Motion Estimation and Classification in Compressive Sensing from Dynamic Measurements," in the Proceedings of IEEE International Conference on Pattern Recognition (**ICPR**), August 2014 (oral presentation).

13. [CVPRW2014] *Vijay Rengarajan*, Abhijith Punnappurath, A.N. Rajagopalan, and Guna Seetharaman. "Efficient Change Detection for Very Large Motion Blurred Images," in the Proceedings of IEEE Conference on Computer Vision and Pattern Recognition Workshop on Registration of Very Large Images, June 2014 (oral presentation).

PROJECTS **Deep Intermodal Video Analytics** (DIVA) with Prof. Aswin Sankaranarayanan (ECE, CMU) and Prof. Deva Ramanan (RI, CMU).
- Developed a robust automatic activity detection using neural network architectures for a streaming video environment.
- Developed a surprise activity detection system which detects unknown activities in unknown capture environments using only a few query example activities revealed at run-time as a surprise.
- Placed *first* based on pmiss and *second* based on nAUDC metrics under Unknown Facilities/Surprise Activities on ActEV'21 Sequestered Data Leaderboard as on August 2021.

AWARDS **Travel Grant** from Google India Pvt. Ltd. to travel to the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2017 held at Honululu, USA.
Doctoral Consortium Participation and Travel Award for the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2016.
Institute Research Scholar Award for excellence in research awarded by Indian Institute of Technology Madras in April 2015.

ACADEMIC ACTIVITIES **Reviewer** for the following journals and conferences:
Transactions on Image Processing, Transactions on Multimedia, Transactions on Computational Imaging, ECCV 2020, AAAI 2020, ICCV 2019, CVPR 2018, 2019, ACCV 2018, NeurIPS 2016, WACV 2016–2019, and ICVGIP 2016.

Teaching Assistant, Indian Institute of Technology Madras   August 2011 – July 2017
Assisted in preparing and conducting lab assignments and class tutorials for the following courses:
Image Signal Processing - Prof. A.N. Rajagopalan
Digital Signal Processing and *Probability Foundations* - Prof. R. Aravind
Computational Photography - Prof. Kaushik Mitra

SOCIAL ACTIVITIES Founder of *Vannam* (meaning color), LGBTQIA+ student support group of Indian Institute of Technology, Madras.