Ram Prabhakar Kathirvel

https://kramprabhakar.github.io rprabha3@jhu.edu

Research Interests

Primary Areas: Computer Vision, Computer Graphics, Image Processing, Machine Learning

Secondary Areas: Multimedia, Remote Sensing

Research Experience

Johns Hopkins University Baltimore, MD

Assistant Research Scientist, MINDS, WSE *July 2024 – present*

MINDS Postdoctoral Fellow *July 2022 – June 2024*

Advisor: Prof. Rama Chellappa

TCS Innovation Labs Bengaluru, India

Researcher *April 2021 – June 2022*

Mentor: Dr. Jayavardhana Gubbi

Education

Indian Institute of Science Bengaluru, India

Ph.D. in Data Sciences *April 2021*

Thesis: Advances in High Dynamic Range Imaging using Deep Learning methods

Advisor: Prof. R. Venkatesh Babu

National Institute of Technology, Rourkela Rourkela, India

M. Tech. in Electronic Systems Engineering *July 2014*

Anna University Chennai, India

B. E. in Electronics and Communication Engineering *July 2010*

Selected Honors and Awards

IAPR Best Biometrics Student Paper Award, IJCB *2024*

Best Student Paper Award (Runner-up), BMVC *2021*

Doctoral Consortium Award, CVPR *2020*

Microsoft Research India travel grant *2017*

ACM MM travel grant *2017*

IISc SPCOM travel grant *2017*

Qualcomm Innovation India Fellowship Finalist *2016*

Teaching Experience

Machine Perception (EN.520.465/665)

Johns Hopkins University *Fall 2025, 24, 23*

Machine Intelligence (EN.520.650)

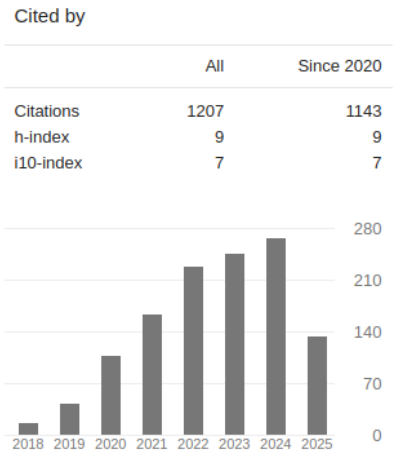
Johns Hopkins University *Spring 2025*

Deep Learning for Computer Vision, Teaching Assistant

Dept. of Computational and Data Sciences, Indian Institute of Science *Jan. 2018 - Apr. 2018*

Embedded System and Real Time Laboratory, Teaching Assistant

Dept. of Electrical Engineering, NIT-Rourkela *Sept. 2013 - Dec. 2013*



Publications (Google Scholar profile)

Journal Papers

1. Y. Guo*, S. Huang*, **K. R Prabhakar**, C. Lau, R. Chellappa, and C. Peng, "Distillation-guided Representation Learning for Unconstrained Video Human Authentication", IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM) 2025.
2. S. Huang, **K. R Prabhakar**, Y. Guo, C.P. Lau, and R. Chellappa, "Whole-body Detection, Recognition and Identification at Altitude and Range", IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM) 2024.
3. **K. R. Prabhakar***, S. Agarwal*, and R. V. Babu, "Self-Gated Memory Recurrent Network for Efficient Scalable HDR Deghosting", IEEE Transactions on Computational Imaging 2021.
4. N. Awasthi, **K. R. Prabhakar**, S. K. Kalva, M. Pramanik, R. V. Babu, and P. K. Yalavarthy, "PA-Fuse: A Deep Supervised Approach for Fusion of Photoacoustic Images with Distinct Reconstruction Characteristics", Journal of Optical Society of America, Biomedical Optics Express 2019.

Conference Papers

5. G. N. Nithin*, K. Narayan*, M. Suin, **K. R Prabhakar**, *et al.*, "Improved Representation Learning for Unconstrained Face Recognition". in *FG 2025*.
6. S. Huang, **K. R Prabhakar**, Y. Guo, R. Chellappa, and C. Peng, "VILLS : Video-Image Learning to Learn Semantics for Person Re-Identification", in *WACV 2025*.
7. J. Xu, M. Liao, **K. R Prabhakar** and V. M. Patel, "Leveraging Thermal Modality to Enhance Reconstruction in Low-Light Conditions" in *ECCV 2024*.
8. B. Pal*, A. Kannan*, **K. R Prabhakar**, A. O. Toole, R. Chellappa, "GAMMA-FACE: GAussian Mixture Models Amend Diffusion Models for Bias Mitigation in Face Images" in *ECCV 2024*.
9. Z. Wang, J. Liu, **K. R Prabhakar**, C. Lau, and R. Chellappa, "HyperGait: A Video-based Multitask Network for Gait Recognition and Human Attribute Estimation at Range and Altitude". in *IJCB 2024*
10. B. Pal, **K. R Prabhakar**, A. Roy, A. O. Toole, R. Chellappa, "DiversiNet: Mitigating Bias in Deep Classification Networks Across Sensitive Attributes through Diffusion-Generated Data". in *IJCB 2024*.
11. Y. Guo, S. Huang, **K. R Prabhakar**, C. Lau, R. Chellappa, and C. Peng, "Distillation-guided Representation Learning for Unconstrained Gait Recognition", in *IJCB 2024*. (IAPR Best Biometrics Student Paper Award).
12. C. Banolia, **K. R Prabhakar**, S. Deshpande, "Monitoring Urban Flooding Using SAR - A Mumbai Case Study", in Data Management, Analytics and Innovation: Proceedings of *ICDMAI 2023*.
13. M. Singh, **K. R Prabhakar**, P. Vishwanath, M. Poduval, A Pal, J Gubbi, V H Krishna, J Gubbi, A Pal, and P Balamuralidhar, "A Few-shot approach to MRI-based Knee Disorder Diagnosis using Fuzzy Layers", in The Indian Conference on Computer Vision, Graphics and Image Processing (*ICVGIP*), IIT Gandhinagar, Gujarat, India, December 2022. (**ORAL**, 27% acceptance rate)
14. **K. R Prabhakar**, V H Krishna, J Gubbi, A Pal, and P Balamuralidhar, "Few-Shot Cross-Sensor Domain Adaptation between SAR and Multispectral Data", in International Geoscience and Remote Sensing Symposium (*IGARSS*), Kuala Lumpur, Malaysia, July 2022.
15. **K. R Prabhakar***, V H Krishna*, J Gubbi, A Pal, and P Balamuralidhar, "Improving SAR and Optical Image Fusion for LULC Classification with Domain Knowledge", in International Geoscience and Remote Sensing Symposium (*IGARSS*), Kuala Lumpur, Malaysia, July 2022.
16. **K. R Prabhakar**, V. Vinod*, N. R. Sahoo*, and R. V. Babu, "Few-shot Domain Adaptation for Low Light RAW Image Enhancement", in British Machine Vision Conference (*BMVC*) 2021. (**ORAL, Best Student Paper Award - Runner-up**)

17. V Vinod, **K. R Prabhakar**, R. V Babu, and A Chakraborty, "Multi-Domain Conditional Image Translation: Translating Driving Datasets from Clear-Weather to Adverse Conditions", in 1st ILDAV workshop, *ICCV 2021* (Online).
18. **K. R Prabhakar**, V H Krishna, M Nayak, J Gubbi, and P Balamuralidhar, "Multi-scale Attention Guided Recurrent Neural Network for Deformation Map Forecasting", in *SPIE RS Symposium* 2021, Madrid, Spain. (**ORAL**)
19. **K. R Prabhakar**, G. Senthil*, S. Agarwal*, R. V. Babu, and R. .S. Gorthi, "Labeled from Unlabeled: Exploiting Unlabeled Data for Few-shot Deep HDR Deghosting". in *Computer Vision and Pattern Recognition (CVPR)* 2021.
20. **K. R Prabhakar**, S. Agarwal, D. Singh, B. Ashwath, and R. V. Babu, "Towards Practical and Efficient High-Resolution HDR Deghosting with CNN". in *European Conference on Computer Vision (ECCV)* online, 2020 (27% acceptance rate).
21. **K. R Prabhakar**, A. Ramasamy, S. Bhambri, J. Gubbi, R. V. Babu, and B. Purushothaman, "CDNet++: Improved Change Detection with Deep Neural Network Feature Correlation", in *IEEE International Joint Conference on Neural Networks (IJCNN)*, Glasgow, Scotland, July 2020.
22. **K. R. Prabhakar***, R. Arora*, A. Swaminathan, K. P. Singh, and R. V. Babu, "A Fast, Scalable and Reliable Deghosting Method for Extreme Exposure Fusion", in *International Conference on Computational Photography (ICCP)*, Tokyo, Japan, May 2019 (**ORAL**, 30% acceptance rate).
23. **K. R Prabhakar**, V. S. Srikar and R. V. Babu, "DeepFuse: A Deep Unsupervised Approach for Exposure Fusion with Extreme Exposure Image Pairs", in *International Conference on Computer Vision (ICCV)*, Venice, Italy, October 2017 (28% acceptance rate).
24. **K. R Prabhakar** and R. V. Babu, "Ghosting-Free Multi-Exposure Image Fusion in Gradient Domain", in *Proc. ICASSP*, Shanghai, China, March 2016.
25. **K. R Prabhakar** and R. V. Babu, "Ghosting-Free HDR for Dynamic Scenes via Shift-maps", in *Proc. ICVGIP*, Guwahati, India, December 2016.

Preprint

26. R. Chand, R. Arora, **K. R Prabhakar**, and R. V. Babu, "CapsFlow: Optical Flow Estimation with Capsule Networks", arXiv:2304.00306.

Patents

1. *Method and System for Semantic Change Detection using Deep Neural Network Feature Correlation* - US Patent No. 11200657 - Date of Patent: 14-Dec-2021.
2. *Method and System for Forecasting Deformation Maps from SAR Images using Multi-scale Attention Guided RNN*.
3. *Method and system for LULC guided SAR visualization* - US Patent App. 18/331,384.
4. *Methods and systems for task adaptation using fuzzy deep learning architecture* - US Patent App. 18/528,536.

Academic Service

- Reviewer for IEEE TIP, TCI, TCSVT, Access
- Reviewer for Elsevier JVIS
- Reviewer for Journal of Information Fusion
- Reviewer for WACV (2025,24,23,22), CVPR (2024,23,22, 21), AAAI 2021, ICVGIP (2024, 23,22,21), ICCV (2021, 19), ECCV 2020

Invited Talks

1. *Data-Efficient Deep Learning: Transforming Low Light Imaging*
   - Indian Institute of Technology (IIT) Bombay, Mar 2025.
2. *Deep Learning for Computer Vision*
   - Indian Institute of Technology (IIT) Jammu, May 2022.
   - National Institute of Technology (NIT) Patna, April 2022.
3. *Deep Learning for Computational Photography*
   - Indian Institute of Technology Hyderabad (IITH), April 2021.
4. Workshop on "*Introduction to Deep Learning with Tensorflow*" at Coimbatore Institute of Technology, Coimbatore (August 2017).
5. Workshop on "*Computer Vision with Deep Learning*" at Valeo India Pvt., Ltd., Chennai (May 2018).

Grants

1. **BRIAR: Modeling and Learning for Person Recognition at a Distance and Altitude**
    - ***Senior Researcher & System integration***, IARPA, $12.5M, 07/22-*present*
    - Topic: Body matching/Person re-identification

2. Assisted in authoring the proposal for DST and ISRO Grant request.

Mentoring and Collaboration

Academic Supervision

- **Supervising bachelor's thesis**: Co-mentored bachelor's thesis of Gowtham Senthil, a graduate student from IIT Tirupati who worked at the Video Analytics Lab, CDS, IISc.
- **Supervising master's thesis**: Co-mentored master's thesis of Rahul Chand, a graduate student from BITS Pilani who worked at the Video Analytics Lab, CDS, IISc.
- **Supervising a year long research internship**: Co-supervised one year research internship of Durgesh Singh, an graduate student from IIST Trivandrum as part of his curriculum.

Interns

- **2020-21**: Susmit Agrawal, Gowtham Senthil (now at ETH Zurich).
- **2019-20**: Aarush Gupta, Kunal Pratap Singh, Anush Kumar, Balraj Ashwath, Durgesh Singh, Ishan Rai, Ayush Mangal, Jaiswal Jaynil, and Ashish Mittal.
- **2018-19**: Adhitya Swaminathan, Suvaansh Bhambri, Shreesh Mohalik, Humair Raj Khan, Ajay Srihari and Rajat Arora (now a visiting scholar at UC Davis).
- **2017-18**: Y.M. Srikar (pursuing Ph.D. at Stony Brook University), Skand Vishwanth Peri and Kirnesh Nandan.
- **2016-17**: V Sai Srikar (now at Qualcomm).

Project Assistant Collaborators

- Priyanka Mandikal (2017-18, pursuing Ph.D. at UT Austin)
- Nihar Ranjan Sahoo (2020-21, pursuing Ph.D. at IITB)
- Vishal Vinod (2020-21, at Glass Imaging, CA)

Past Internships

- TCS Innovation Labs, Bangalore *April - June 2018*

Administrative Service

- *Lab safety warden* at Video Analytics Lab, CDS, IISc between 2018-19.
- *Web admin*: Assisted in maintaining website contents of Department of CDS, IISc from 2018-19.

References

References will be provided on request.