
Research Interests

Computer Vision: Adversarial Attacks, Person Re-Identification, Anomaly Detection

Education

- 2018-Present **University of California, Riverside, USA**
Ph.D. Candidate in Electrical and Computer Engineering
Advisor: Amit K. Roy-Chowdhury
GPA - 3.84 / 4.00
- 2016-2018 **National Institute of Technology, Tiruchirappalli, India**
M.S.(Research) in Electronics and Communication Engineering
Advisor: P. Palanisamy
Thesis: Exploiting Sparsity for DOA Estimation Algorithms in Linear Array
GPA - 8.80 / 10.00
- 2011-2015 **Biju Patnaik University of Technology, India**
B.Tech. in Electronics and Communication Engineering
Advisor: Utpal K. Dash
Thesis: Target Tracking using Parametric Spectral Estimation Methods
GPA - 9.02 / 10.00

Research Experience

- Sept 2018-Present **University of California, Riverside, USA**
Graduate Student Researcher, Video Computing Group
 - Advisor: Amit K. Roy-Chowdhury
 - Focus: Computer Vision, Deep Learning.
- June 2022-Sep 2022 **NEC Laboratories, San Jose, California, USA**
Research Intern, Media Analytics Group
 - Mentor: Yumin Suh
 - Focus: Dynamic Networks for Multi-Task Learning.
- June 2021-Sep 2021 **Mitsubishi Electric Research Laboratories, Cambridge, Massachusetts, USA**
Research Intern, Computer Vision Group
 - Mentor: Kuan-Chuan Peng
 - Focus: Video Anomaly Detection.
- June 2020-Sep 2020 **United Imaging Intelligence, America, Cambridge, Massachusetts, USA**
Research Intern, Vision and Robotics Group
 - Mentor: Ziyang Wu, Srikrishna Karanam, Meng Zheng
 - Focus: Video-based Person Re-Identification.
- Feb 2016-April 2018 **National Institute of Technology, Tiruchirappalli, India**
Research Scholar, Signal and Image Processing Lab.
 - Advisor: P. Palanisamy
 - Focus: Array Signal Processing, Compressed Sensing.

May 2014-Aug 2015 **Silicon Institute of Technology, Bhubaneswar, India**
Research Assistant
◦ Advisor: Utpal K. Dash
◦ Focus: Array Signal Processing.

Publications ([🔗 Google Scholar profile](#))

- NeurIPS 2021 **Adversarial Attacks on Black Box Video Classifiers: Leveraging the Power of Geometric Transformations**
Shasha Li*, Abhishek Aich*, Shitong Zhu, M. Salman Asif, Chengyu Song, Amit K. Roy-Chowdhury, Srikanth Krishnamurthy (* joint first authors)
Advances in Neural Information Processing Systems, 2021
- ICCV 2021 **Spatio-Temporal Representation Factorization for Video-based Person Re-Identification**
Abhishek Aich, Meng Zheng, Srikrishna Karanam, Terrence Chen, Amit K. Roy-Chowdhury, Ziyang Wu
IEEE/CVF International Conference on Computer Vision, 2021
- MICCAI 2022 **Poisson2Sparse: Self-Supervised Poisson Denoising From a Single Image**
Calvin-Khang Ta*, Abhishek Aich*, Akash Gupta*, Amit K. Roy-Chowdhury (* joint first authors)
International Conference on Medical Image Computing and Computer Assisted Intervention, 2022
- CVPR 2020 **Non-Adversarial Video Synthesis with Learned Priors**
Abhishek Aich*, Akash Gupta*, Rameswar Panda, Rakib Hyder, M. Salman Asif, Amit K. Roy-Chowdhury (* joint first authors)
IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2020
- ACMMM 2020 (Oral) **ALANET: Adaptive Latent Attention Network for Joint Video Deblurring and Interpolation**
Akash Gupta, Abhishek Aich, Amit K. Roy-Chowdhury
ACM International Conference on Multimedia, 2020
- ISBI-W 2020 **Deep Quantized Representation for Enhanced Reconstruction**
Akash Gupta, Abhishek Aich, Kevin Rodriguez, G. Venugopala Reddy, Amit K. Roy-Chowdhury
IEEE International Symposium on Biomedical Imaging Workshops, 2020
- TENCON 2017 **A Novel CS-Beamformer root-MUSIC Algorithm and its Subspace Deviation Analysis**
Abhishek Aich, P. Palanisamy
IEEE Region 10 Conference, 2017
- TENCON 2016 (Oral) **A Strict Bound for Dimension of Measurement Matrix for CS-Beamformer MUSIC Algorithm**
Abhishek Aich, P. Palanisamy
IEEE Region 10 Conference, 2016
- ICCSP 2017 (Oral) **On Application of OMP and CoSaMP Algorithms for DOA Estimation Problem**
Abhishek Aich, P. Palanisamy
IEEE International Conference on Communication and Signal Processing, 2017

Filed Patents

- US Patent Application 17-653015 **Method and System for Zero-Shot Cross Domain Video Anomaly Detection**
Abhishek Aich, Kuan-Chuan Peng
Date of Application: March 1, 2022

Teaching Experience

- Teaching Assistant **University of California, Riverside**
Supervisor: Amit K. Roy-Chowdhury
- EE/CS 228 Introduction to Deep learning: Spring 2022
 - EE 175A/B Senior Design Project (Computer Vision): Fall 2020 - Spring 2021
 - EE 175A/B Senior Design Project (Computer Vision): Fall 2019 - Spring 2020
- Teaching Assistant **National Institute of Technology, Tiruchirappalli**
Supervisor: P. Palanisamy
- EC 610 Digital Signal and Image Processing Lab.: Jan 2018 - April 2018

Honors & Awards

- 2020-2021 **Student Volunteer Award.** NeurIPS 2020, ICLR 2021, ICML 2021
- 2018-2019 **Deans Distinguished Fellowship Award.** University of California, Riverside
- 2016-2018 **MHRD Scholarship.** Govt. of India
- 2012-2015 **Scholar's Club.** Silicon Institute of Technology, Bhubaneswar
- Top 3 rank holders of the Department of Electrical and Communication Engineering
- 2012-2015 **e-Medhabruti Scholarship.** Govt. of Odisha, India

Press Coverage

- VentureBeat **IBM's AI generates new footage from video stills** *March 2020*
- Coverage of our CVPR 2020 paper on Video Generation
 - Article: <https://tinyurl.com/yxdxm7m8>

Skills

- Languages Python
- Libraries PyTorch
- Toolbox/Software MATLAB, OpenCV

Professional Services

- Journal Reviewer IEEE Transactions on Image Processing (TIP)
IEEE Transactions on Signal Processing (TSP)
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
Taylor & Francis International Journal of Electronics Letter
IET Signal Processing
- Conference Reviewer Conference on Computer Vision and Pattern Recognition (CVPR)
International Conference on Computer Vision (ICCV)
European Conference on Computer Vision (ECCV)
- Program Committee (Workshops) CVPR 2022-(TCV, DNetCV), AAAI 2021-(AIBSD), CVPR 2021-(HVU, TCV, DNetCV)/2020-(NAS), ECCV 2020-MVA