Abhishek Aich

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California, USA 92521
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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: Ziyan 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, Ziyan 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)
Winter Conference on Applications of Computer Vision (WACV)

Program Committee (Workshops): CVPR 2022-(TCV, DNetCV)/2021-(HVU, TCV, DNetCV)/2020-(NAS), AAAI 2021-(AIBSD), ECCV 2020-MVA