# Abhishek Aich

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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 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*, <u>Abhishek Aich</u>*, 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**
<u>Abhishek Aich</u>, Meng Zheng, Srikrishna Karanam, Terrence Chen, Amit K. Roy-Chowdhury, Ziyan Wu
*IEEE/CVF International Conference on Computer Vision, 2021*

**CVPR 2020** — **Non-Adversarial Video Synthesis with Learned Priors**
<u>Abhishek Aich</u>*, 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, <u>Abhishek Aich</u>, Amit K. Roy-Chowdhury
*ACM International Conference on Multimedia, 2020*

**ISBI-W 2020** — **Deep Quantized Representation for Enhanced Reconstruction**
Akash Gupta, <u>Abhishek Aich</u>, 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**
<u>Abhishek Aich</u>, P. Palanisamy
*IEEE Region 10 Conference, 2017*

**TENCON 2016 (Oral)** — **A Strict Bound for Dimension of Measurement Matrix for CS-Beamformer MUSIC Algorithm**
<u>Abhishek Aich</u>, P. Palanisamy
*IEEE Region 10 Conference, 2016*

**ICCSP 2017 (Oral)** — **On Application of OMP and CoSaMP Algorithms for DOA Estimation Problem**
<u>Abhishek Aich</u>, 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 175A/B Senior Design Project (Computer Vision): Fall 2019 - Spring 2020
- EE 175A/B Senior Design Project (Computer Vision): Fall 2020 - Spring 2021

**Teaching Assistant** — **National Institute of Technology, Tiruchirappalli**
Supervisor: P. Palanisamy
- EC 610 Digital Signal and Image Processing Lab.: Jan 2018 - April 2018

## Honors & Awards

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| 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

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| 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

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

## Professional Services

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| 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) | AAAI 2021-(AIBSD), CVPR 2021-(HVU, TCV, DNetCV)/2020-(NAS), ECCV 2020-MVA |