Abhishek Aich

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RESEARCH INTERESTS

Computer Vision, Deep Learning, and Sparse Signal Optimization
- Specific Interests: Learning from Videos

EDUCATION

University of California, Riverside, California, USA
- Ph.D. in Electrical and Computer Engineering — Sep 2018 – Present
  - Adviser: Prof. Amit K. Roy-Chowdhury
  - GPA: 3.84 / 4.00

National Institute of Technology, Tiruchirappalli, Tamil Nadu, India
- M.S. in Electronics and Communication Engineering — 2016 – 2018
  - Thesis: Exploiting Sparsity for Direction of Arrival Estimation Algorithms in Linear Array
  - Adviser: Prof. P. Palanisamy
  - GPA: 8.80 / 10.00

Biju Patnaik University of Technology, Odisha, India
- B.Tech. in Electronics and Communication Engineering — 2011 – 2015
  - Thesis: Target Tracking using Parametric Spectral Estimation Methods
  - Supervisor: Prof. Utpal K. Dash
  - GPA: 9.02 / 10.00

RESEARCH EXPERIENCE

Mitsubishi Electric Research Laboratories, Cambridge — Massachusetts, USA
- Research Intern — Jun 2021 – Sep 2021
  - Group: Computer Vision Group
  - Mentors: Dr. Kuan-Chuan Peng
  - Focus: Video Anomaly Detection.

United Imaging Intelligence, America, Cambridge — Massachusetts, USA
- Research Intern — Jun 2020 – Sep 2020
  - Group: Vision and Robotics Group
  - Mentors: Dr. Ziyan Wu, Dr. Srikrishna Karanam, Dr. Meng Zheng
  - Focus: Video-based Person Re-Identification.

University of California, Riverside — California, USA
- Graduate Student Researcher — Sep 2018 – Present
  - Group: Video Computing Group
  - Supervisor: Prof. Amit K. Roy-Chowdhury
  - Focus: Computer Vision and Deep Learning.

National Institute of Technology, Tiruchirappalli — Tamil Nadu, India
- Research Scholar — Feb 2016 – Apr 2018
  - Group: Signal and Image Processing Lab.
  - Supervisor: Prof. P. Palanisamy
  - Focus: Array Signal Processing, Compressed Sensing.

Silicon Institute of Technology, Bhubaneswar — Odisha, India
- Research Assistant — May 2014 – Aug 2015
  - Supervisor: Prof. Utpal K. Dash
  - Focus: Array Signal Processing.

TEACHING EXPERIENCE

University of California, Riverside — California, USA
- Teaching Assistant — Fall 2019(/2020) – Winter 2020(/2021)
  - Course: Senior Design Project (EE175A/B, Computer Vision)
  - Supervisor: Prof. Amit K. Roy-Chowdhury

National Institute of Technology, Tiruchirappalli — Tamil Nadu, India
- Teaching Assistant — Jan 2018 – Apr 2018
  - Graduate Course: Digital Signal and Image Processing Lab. (EC610)
  - Supervisor: Prof. P. Palanisamy

SELECTED PUBLICATIONS

[1] Shasha Li*, Abhishek Aich*, Shitong Zhu, M. Salman Asif, Chengyu Song, Amit K. Roy-Chowdhury, Srikanth Krishnamurthy, "Adversarial Attacks on Black Box Video Classifiers: Leveraging the Power of Geometric Transformations", *Thirty-fifth Conference on Advances in Neural Information Processing Systems (NeurIPS)*, 2021. (* joint first authors)

[2] Abhishek Aich, Meng Zheng, Srikrishna Karanam, Terrence Chen, Amit K. Roy-Chowdhury, and Ziyan Wu, "Spatio-Temporal Representation Factorization for Video-based Person Re-Identification", *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021.

[3] Akash Gupta, Abhishek Aich, and Amit K. Roy-Chowdhury, "ALANET: Adaptive Latent Attention Network for Joint Video Deblurring and Interpolation", *ACM International Conference on Multimedia (ACM MM)*, 2020. (*Oral*)

[4] Abhishek Aich*, Akash Gupta*, Rameswar Panda, Rakib Hyder, M. Salman Asif, and Amit K. Roy-Chowdhury, "Non-Adversarial Video Synthesis with Learned Priors", *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020. (* joint first authors)

[5] Akash Gupta, Abhishek Aich, Kevin Rodriguez, G. Venugopala Reddy, and Amit K. Roy-Chowdhury, "Deep Quantized Representation for Enhanced Reconstruction", *ISBI 2020 Workshop*, 2020.

[6] Abhishek Aich, and P. Palanisamy, "A Novel CS-Beamformer root-MUSIC Algorithm and its Subspace Deviation Analysis", *IEEE Region 10 Conference (TENCON)*, 2017.

[7] Abhishek Aich, and P. Palanisamy, "On Application of OMP and CoSaMP Algorithms for DOA Estimation Problem", *IEEE International Conference on Communication and Signal Processing (ICCSP)*, 2017. (*Oral*)

[8] Abhishek Aich, and P. Palanisamy, "A Strict Bound for Dimension of Measurement Matrix for CS-Beamformer MUSIC Algorithm", *IEEE Region 10 Conference (TENCON)*, 2016. (*Oral*)

AWARDS & SCHOLARSHIPS

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

TECHNICAL SKILLS

- **Programming Skills**: Python, MATLAB
- **Deep Learning Libraries**: PyTorch
- **Scientific Computing Libraries**: numpy, scipy, sciKit-learn, matplotlib
- **Others**: LaTeX, MS Office, OpenCV, Jupyter

GRADUATE COURSES

• Introduction to Deep Learning • Adv. Computer Vision • Machine Learning • Information Theory • Convex Optimization • State and Parameter Estimation Theory • Stochastic Processes • Sparsity, Structure, and Inference • Math. Methods for EE • Adv. Digital Signal Processing

PROFESSIONAL ACTIVITIES

Conference Reviewer:
CVPR 2022, ICCV 2021, CVPR 2021–(HVU, TCV, DNetCV)/2020–(NAS), ECCV 2020–MVA, IEEE TENCON 2016/2017

Journal Reviewer:
IEEE TIP, IEEE TSP, TF IJEL, IET SP