SK MIRAJ AHMED

WCH 371, BCOE, University of california Riverside, CA 92507

⋄ sahme047@ucr.edu ⋄ +1(951)-807-4068

RESEARCH INTERESTS

- **Broad Area:** Computer Vision, Machine Learning, Deep Learning, Convex Optimization

- **Specific Area:** Test time adaptation, Cross modal knowledge transfer, Source free Domain Adaptation, Transfer Learning, Metric Learning, Person Re-identification, Point cloud Registration, Geometry, 3D Reconstruction

EDUCATION

University of California, Riverside, CA, USA   *September 2018 - Present*
PhD, Department of Electrical and Computer Engineering
Advisor: Dr. Amit K. Roychowdhury, **GPA:** 4.0/4.0

Indian Institute of Science, Bengaluru, INDIA   *August 2015 - August 2018*
Master of Science(in Engineering), Department of Electrical Engineering
Specialization: System Science and Signal Processing
Advisor: Dr. Kunal N. Chaudhury, **GPA:** 6.6/8.0
Thesis: *Multiview Registration Using Rank-Constrained Semidefinite Programming*

Jadavpur University, Kolkata, INDIA   *August 2011 - July 2015*
Bachelor of Engineering, Department of Electrical Engineering
GPA: 8.01/10.0

RESEARCH EXPERIENCE

Graduate Student Researcher   *October 2021 - Present*
Video Computing Group (VCG)   University of California Riverside
Advisor: Dr. Amit K. Roychowdhury
- **Test time adaptation with deep models**
- Online adaptation without access to source data
- Prevent forgetting in a dynamic enviromnet

- **Exploration of Differential Privacy**

Research Intern   *June 2021 - September 2021*
Company: Mitsubishi Electric Research Laboratories, Cambridge,Massachusetts
Group: Computer Vision Group
Mentors: Dr. Suhas Lohit, Dr. Kuan-Chuan Peng, Dr. Michael Jones
Research Focus: Cross modal knowledge transfer

Graduate Student Researcher   *December 2019 - May 2021*
Video Computing Group (VCG)   University of California Riverside
Advisor: Dr. Amit K. Roychowdhury
- **Source-free domain adaptation with deep models**
- Domain adaptation without access to source data
- Hypotheis transfer learning with a trained deep model as hypothesis

Graduate Student Researcher   *January 2019 - November 2019*
Video Computing Group (VCG)   University of California Riverside
Advisor: Dr. Amit K. Roychowdhury
- **Camera adaptation in a person re-identification network with limited labelled data**
- Transfer of knowledge from multiple metrics
- Hypothesis transfer learning from limited labelled data
- Minimizing effect of negative transfer

Graduate Student Researcher   *August 2015 - August 2018*
Lab of Imaging Science and Algorithms   Indian Institute of Science
Advisor: Dr. Kunal N. Chaudhury
- **Multiview Registration Using Rank-Constrained Semidefinite Programming**
- Motion synchronisation using non convex ADMM
- Joint computation of rigid transforms associated with multiple point clouds.
- Alignment of multiple point clouds in one shot thereby minimizing registration error

ACCEPTED PUBLICATIONS

Journals:

- Rajat Sanyal , **Sk Miraj Ahmed** , Monika Jaiswal, Kunal Narayan Chaudhury. "A Scalable ADMM Algorithm for Rigid Registration". *IEEE Signal Processing Letters* (**SPL**), 2017.

- **Sk Miraj Ahmed**, Niladri Ranjan Das, Kunal Narayan Chaudhury. "Least-squares registration of point sets over $SE(d)$ using closed-form projections". *Computer Vision and Image Understanding* (**CVIU**), 2019.

Conferences:

- **Sk Miraj Ahmed**, Kunal Narayan Chaudhury. "Global Multiview Registration Using Nonconvex ADMM". *International Conference on Image Processing* (**ICIP**) 2017 ***Selected for Oral Presentation***

- **Sk Miraj Ahmed**, Aske Lejbølle, Rameswar Panda, Amit K. Roy-Chowdhury. "Camera Onboarding for Person Re-identification using Hypothesis Transfer Learning".In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (**CVPR**) 2020 (pp. 12144-12153)

- **Sk Miraj Ahmed**, Dripta S. Raychaudhuri, Sujoy Paul, Samet oymak, Amit K. Roy-Chowdhury. "Unsupervised Multi-source Domain Adaptation Without Access to Source Data" In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (**CVPR**) 2021 (pp. 10103-10112) ***Selected for Oral Presentation***

- **Sk Miraj Ahmed**, Suhas Lohit, Kuan-Chuan Peng, Michael J. Jones, Amit K. Roy-Chowdhury. "Cross-Modal Knowledge Transfer Without Task-Relevant Source Data" *To appear in proceedings of the European Conference on Computer Vision* (**ECCV**) 2022 ***Selected for Oral Presentation***

- Cody Simons, Dripta S. Raychaudhuri, **Sk Miraj Ahmed**, Suya You, Konstantinos Karydis, Amit K. Roy-Chowdhury. "SUMMIT: Source-Free Adaptation of Uni-Modal Models to Multi-Modal Targets" *To appear in proceedings of the International Conference on Computer Vision* (**ICCV**) 2023

Book Chapters:

- **Sk Miraj Ahmed**, Dripta Raychaudhuri, Samet oymak, Amit K. Roy-Chowdhury. "Source distribution weighted multisource domain adaptation without access to source data" *Published by Elsevier*

HONORS AND AWARDS

- Got prestigious **Dissertation Year Program Fellowship Award** by Graduate Division at University of California, Riverside, 2022.

- Got **Deans Distinguished Fellowship Award** at University of California, Riverside, 2018.

- Awarded a scholarship under **Scheme of Scholarship for College and University Students**reg. of Govt. of India, 2010.

COMPUTER SKILLS

- **Programming Skills:** Python, Matlab, C
- **Deep Learning Libraries:** Pytorch
- **Others:** LaTeX, MS Office

GRADUATE COURSES:

- Advanced Computer Vision • Machine Learning • Information Theory • Computational Methods for Optimization • Convex Optimization and its Applications • Stochastic Processes • State and Parameter Estimation • Linear Algebra • Data Structures and Algorithms • Advanced Digital Image Processing • Deep Learning

PROFESSIONAL ACTIVITIES:

- Served as technical volunteer at EECS symposium held at Indian Institute of Science, 2017
- Reviewed manuscripts for top-tier conferences and journals *CVPR, ECCV, ICCV, NeuRIPS, AAAI, TPAMI, T-ITS, Patterns*