Rameswar Panda

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Research Interests

Computer Vision: Video Analysis, Activity Recognition, Person Re-Identification

Machine Learning: Dynamic Neural Networks, Multi-task and Multi-modal learning

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Education

2014–2018   **University of California, Riverside**, USA.
Ph.D. Candidate in Electrical and Computer Engineering
Advisor: Amit K. Roy-Chowdhury
Thesis: Visual Learning with Weak Supervision: Applications in Video Summarization and Person Re-identification

2011–2013   **Jadavpur University**, India.
M.S. in Computer Engineering
Advisor: Ananda S. Chowdhury
Thesis: Graph Theoretic Solutions for Two Multimedia Problems

2007–2011   **Biju Patnaik University of Technology**, India.
B.Tech. in Electronics and Telecommunication Engineering

Research Experience

12.2018 – Present   **MIT-IBM Watson AI Lab, IBM Research, Cambridge**, USA.
Research Staff Member, AI Computer Vision
- Dynamic Neural Networks for Video Understanding
- Multi-Task and Multi-Modal Learning
- Activity Recognition and Detection (IARPA DIVA)
- Transfer and Few-Shot Learning (DARPA LwLL)

09.2014 – 12.2018   **University of California, Riverside**, USA.
Graduate Student Researcher, Video Computing Group
Advisor: Amit K. Roy-Chowdhury
- Incidental Supervision for Video Summarization
- Unsupervised Adapative Person Re-Identification
- Reinforcement Learning for Online Video Fast-Forwarding
- Webly Supervised Learning for Image-Text Retrieval

06.2018 – 09.2018   **NEC Labs America**, Cupertino, USA.
Research Intern, Media Analytics Group
Mentors: Xiang Yu, Samuel Schulter, Manmohan Chandraker
- Cross-Dataset Knowledge Transfer for Person Re-Identification

06.2017 – 11.2017   **Adobe Research**, San Jose, CA.
Research Intern, Creative Intelligence Lab
Mentors: Jianming Zhang, Haoxiang Li, Joon-Young Lee, Xin Lu
- Understanding and Overcoming Dataset Bias in Visual Emotion Analysis

06.2016 – 09.2016	**Siemens Corporate Research**, Princeton, USA.
	Research Intern, Computer Vision Group
	Mentors: Ziyan Wu, Jan Ernst
	○ Weakly Supervised Defect Detection and Localization in Images
06.2013-08.2014	**Silicon Institute of Technology**, Bhubaneswar, India.
	Assistant Professor, Department of ETC
	Director: Saroj K. Mishra
	○ Personalized Video Key Frame Extraction using Social Media Clues
07.2011 – 06.2013	**Jadavpur University**, Kolkata, India.
	Research Assistant, IVPR Group
	Advisor: Ananda S. Chowdhury
	○ Video Key Frame Extraction using Delaunay Graph Clustering
	○ Movie Scene Segmentation using Fast Spectral Clustering

Teaching Experience

Teaching Assitant	**University of California, Riverside**.
	○ EE 240 Pattern Recognition (Spring 2017)
	○ EE 215 Stochastic Process (Fall 2016)
Teaching Assistant	**Jadavpur University, India**.
	○ C Programming and Data Structures
Instructor	**Silicon Institute of Technology, India**.
	○ Image Processing
	○ Digital Signal Processing

Publications (⋮ Google Scholar Profile)

Journal Papers

TCSVT 2020	**Exploiting Global Camera Network Constraints for Unsupervised Video Person Re-identification**.
	Xueping Wang, <u>Rameswar Panda</u>, Min Liu, Yaonan Wang, Amit K. Roy-Chowdhury
	IEEE Transactions on Circuits and Systems for Video Technology, 2020
PR 2019	**Adaptation of Person Re-identification Models for On-boarding New Camera(s)**.
	<u>Rameswar Panda</u>, Amran Hossen Bhuiyan, Vittorio Murino, Amit K. Roy-Chowdhury
	Pattern Recognition, 2019
TCSVT 2019	**Construction of Diverse Image Datasets from Web Collections with Limited Labeling**.
	Niluthpol C. Mithun, <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury
	IEEE Transactions on Circuits and Systems for Video Technology, 2019
TIP 2017	**Diversity-aware Multi-Video Summarization**.
	<u>Rameswar Panda</u>, Niluthpol C. Mithun, Amit K. Roy-Chowdhury
	IEEE Transactions on Image Processing, 2017
TMM 2017	**Multi-View Surveillance Video Summarization via Joint Embedding and Sparse Optimization**.
	<u>Rameswar Panda</u>, Amit K. Roy-Chowdhury
	IEEE Transactions on Multimedia, 2017

TCYB 2017	**Nystrom Approximated Temporally Constrained Multi-similarity Spectral Clustering Approach for Movie Scene Detection**. <u>Rameswar Panda</u>, Sanjay K. Kuanar, Ananda S. Chowdhury IEEE Transactions on Cybernetics, 2017
CVIU 2016	**Continuous Adaptation of Multi-Camera Person Identification Models through Sparse Non-redundant Representative Selection**. Abir Das, <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury Computer Vision and Image Understanding, 2016
JVCIR 2013	**Video Key frame Extraction through Dynamic Delaunay Clustering with a Structural Constraint**. Sanjay K. Kuanar, <u>Rameswar Panda</u>, Ananda S. Chowdhury Journal of Visual Communication and Image Representation

Conference Papers [Acc. Rate: Acceptance Rate; h5-Index: from Google Scholar]

AAAI 2021	**NASTransfer: Analyzing Architecture Transferability in Large Scale Neural Architecture Search**. <u>Rameswar Panda</u>, Michele Merler, Mayoore Jaiswal, Hui Wu, Kandan Ramakrishnan, Ulrich Finkler, Chun-Fu Chen, Minsik Cho, David Kung, Rogerio Feris, Bishwaranjan Bhattacharjee AAAI Conference on Artificial Intelligence, 2021
NeurIPS 2020	**AdaShare: Learning What To Share For Efficient Deep Multi-Task Learning**. Ximeng Sun, <u>Rameswar Panda</u>, Rogerio Feris, Kate Saenko Advances in Neural Information Processing Systems, 2020
MM 2020	**Adversarial Knowledge Transfer from Unlabeled Data**. Akash Gupta*, <u>Rameswar Panda</u>*, Sujoy Paul, Jianming Zhang, Amit K. Roy-Chowdhury ACM International Conference on Multimedia, 2020 (* joint first author)
ECCV 2020	**AR-Net: Adaptive Frame Resolution for Efficient Action Recognition**. Yue Meng, Chung-Ching Lin, <u>Rameswar Panda</u>, Prasanna Sattigeri, Leonid Karlinsky, Aude Oliva, Kate Saenko, Rogerio Feris European Conference on Computer Vision, 2020
MICCAI 2020	**Fairness of Classifiers Across Skin Tones in Dermatology**. Newton M. Kinyanjui, Timothy Odonga, Celia Cintas, Noel C. F. Codella, <u>Rameswar Panda</u>, Prasanna Sattigeri, Kush R. Varshney Medical Image Computing and Computer Assisted Interventions, 2020
CVPR 2020	**Non-Adversarial Video Synthesis with Learned Priors**. Abhishek Aich, Akash Gupta, <u>Rameswar Panda</u>, Rakib Hyder, Salman Asif, Amit K. Roy-Chowdhury IEEE Conference on Computer Vision and Pattern Recognition, 2020
CVPR 2020	**Camera On-boarding for Person Re-identification using Hypothesis Transfer Learning**. Sk Miraj Ahmed, Aske R. Lejbolle, <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury IEEE Conference on Computer Vision and Pattern Recognition, 2020
ICCCN 2020	**Measurement-driven Security Analysis of Imperceptible Impersonation Attacks**. Shasha Li, Karim Khalil, <u>Rameswar Panda</u>, Chengyu Song, Srikanth V. Krishnamurthy , Amit K. Roy-Chowdhury, Ananthram Swami International Conference on Computer Communications and Networks, 2020 (Invited Paper)

ECCV 2018	**Contemplating Visual Emotions: Understanding and Overcoming Dataset Bias**. <u>Rameswar Panda</u>, Jianming Zhang, Haoxiang Li, Joon-Young Lee, Xin Lu, Amit K. Roy-Chowdhury European Conference on Computer Vision, 2018
MM 2018	**Webly Supervised Joint Embedding for Cross-Modal Image-Text Retrieval**. Niluthpol C. Mithun, <u>Rameswar Panda</u>, Evangelos Papalexakis, Amit K. Roy-Chowdhury ACM International Conference on Multimedia, 2018
CVPR 2018	**FFNet: Video Fast-Forwarding via Reinforcement Learning**. Shuyue Lan, <u>Rameswar Panda</u>, Qi Zhu, Amit K. Roy-Chowdhury IEEE Conference on Computer Vision and Pattern Recognition, 2018
ICCV 2017	**Weakly Supervised Summarization of Web Videos**. <u>Rameswar Panda</u>, Abir Das, Ziyan Wu, Jan Ernst, Amit K. Roy-Chowdhury International Conference on Computer Vision, 2017
CVPR 2017	**Collaborative Summarization of Topic-Related Videos**. <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury IEEE Conference on Computer Vision and Pattern Recognition, 2017
CVPR 2017	**Unsupervised Adaptive Re-identification in Open World Dynamic Camera Networks**. <u>Rameswar Panda</u>*, Amran Hossen Bhuiyan*, Vittorio Murino, Amit K. Roy-Chowdhury IEEE Conference on Computer Vision and Pattern Recognition, 2017 (* joint first author) (Spotlight Oral)
ICASSP 2017	**Sparse Modeling for Topic-oriented Video Summarization**. <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury International Conference on Acoustics, Speech and Signal Processing, 2017
MM 2016	**Generating Diverse Image Datasets with Limited Labeling**. Niluthpol C. Mithun, <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury ACM International Conference on Multimedia, 2016
ICIP 2016	**Embedded Sparse Coding for Summarizing Multi-View Videos**. <u>Rameswar Panda</u>, Abir Das, Amit K. Roy-Chowdhury International Conference on Image Processing, 2016 (Oral)
ICPR 2016	**Video Summarization in a Multi-View Camera Network**. <u>Rameswar Panda</u>, Abir Das, Amit K. Roy-Chowdhury International Conference on Pattern Recognition, 2016
ICIP 2015	**Active Image Pair Selection for Continuous Person Re-identification**. Abir Das, <u>Rameswar Panda</u>, Amit K. Roy-Chowdhury International Conference on Image Processing, 2015
ICPR 2014	**Scalable Video Summarization using Skeleton Graph and Random Walk**. <u>Rameswar Panda</u>, Sanjay K. Kuanar, Ananda S. Chowdhury International Conference on Pattern Recognition, 2014 (Oral)
ICPR 2012	**Video Story-board Design using Delaunay Graphs**. Ananda S. Chowdhury, Sanjay K. Kuanar, <u>Rameswar Panda</u>, Moloy N. Das International Conference on Pattern Recognition, 2012
PReMI 2013	**Video Key Frame Extraction through Canonical Correlation Analysis and Graph Modularity**. <u>Rameswar Panda</u>, Sanjay K Kuanar, Ananda S. Chowdhury International Conference on Pattern Recognition and Machine Intelligence, 2013

RTIV 2017	**Camera Network Video Summarization**. Rameswar Panda, Amit K. Roy-Chowdhury Real-Time Image and Video Processing, International Society for Optics and Photonics, 2017
NCVPRIPG 2013	**A Frequency Domain Approach to Silhouette based Gait Recognition**. Soumyadip Sengupta, Udit Halder, Rameswar Panda, Ananda S. Chowdhury National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics, 2013
CODIS 2012	**VISUC: Video Summarization with User Customization**. Rameswar Panda, Sanjay K. Kuanar, Ananda S. Chowdhury International Conference on Communications, Devices and Intelligent Systems, 2012
ICCCNT 2012	**A Trust based Clustering with Ant Colony Routing in VANET**. Rashmi R. Sahoo, Rameswar Panda, Dhiren K. Behera, Mrinal K. Naskar International Conference on Computing, Communication and Networking Technologies, 2012

Workshop Papers

ECCVW 2020	**Mitigating Dataset Imbalance via Joint Generation and Classification**. Aadarsh Sahoo, Ankit Singh, Rameswar Panda, Rogerio Feris, Abir Das ECCV Workshop on Imbalance Problems in Computer Vision, 2020
CVPRW 2020	**Relationship Matters: Relation Guided Knowledge Transfer for Incremental Learning of Object Detectors**. Kandan Ramakrishnan, Rameswar Panda, Quanfu Fan, John Henning, Aude Oliva, Rogerio Feris CVPR Workshop on Continual Learning in Computer Vision, 2020
NeurIPSW 2019	**Estimating Skin Tone and Effects on Classification Performance in Dermatology Datasets**. Newton M. Kinyanjui, Timothy Odonga, Celia Cintas, Noel C. F. Codella, Rameswar Panda, Prasanna Sattigeri, Kush R. Varshney NeurIPS Fair Machine Learning for Health Workshop, 2019

Book Chapters

Springer 2020 Computer Vision	**Person Re-identification: Current Approaches and Future Challenges**. Rameswar Panda, Amit K. Roy-Chowdhury Computer Vision: A Reference Guide, Springer International Publishing, 2020

Preprints

P1	**Deep Analysis of CNN-based Spatio-temporal Representations for Action Recognition**. Chun-Fu Chen, Rameswar Panda, Kandan Ramakrishnan, Rogerio Feris, John Cohn, Aude Oliva, Quanfu Fan arXiv preprint arXiv:2010.11757, 2020

Patents

US 10,672,115	**Weakly supervised Anomaly Detection and Segmentation in Images**. Rameswar Panda, Ziyan Wu, Arun Innanje, Ramesh Nair, Ti-chiun Chang, Jan Ernst Date of Patent: June 02, 2020
US 10,192,301	**Method and System for Detecting Line Defects on Surface of Object**. Rameswar Panda, Ziyan Wu, Jan Ernst, Kevin P Bailey Date of Patent: January 29, 2019

US 10,215,714 **Method and System for Detecting Defects on Surface of Object**.
Ziyan Wu, <u>Rameswar Panda</u>, Jan Ernst, Kevin P Bailey
Date of Patent: February 26, 2019

Press Coverage

VentureBeat **IBM's AI generates new footage from video stills**.
`https://tinyurl.com/yxdxm7m8`, March 2020

Tutorials & Talks

June 2019 **Recent Advances in Visual Data Summarization**.
CVPR 2019, Long Beach, CA, USA.

Oct. 2018 **Visual Learning with Weak Supervision**.
IBM T.J. Watson Research Center, NY, USA.

July 2018 **Multi-View Surveillance Video Summarization via Joint Embedding and Sparse Optimization**.
ICME 2018, San Diego, CA, USA.

July 2017 **Unsupervised Adaptive Re-identification in Dynamic Camera Network**.
Spotlight Presentation, CVPR, Hawaii, USA.

Sept. 2016 **Embedded Sparse Coding for Summarizing Multi-View Videos**.
Oral Presentation, ICIP, Phoenix, USA.

Dec. 2015 **Sparse Optimization for Summarizing Videos**.
GIAN Workshop on Video Understanding, IIT, Kharagpur, India.

Dec. 2013 **A Frequency Domain Approach to Silhouette based Gait Recognition**.
Oral Presentation, NCVPRIPG, Jodhpur, India.

Honors & Awards

June 2018 **S. Sue Johnson Endowed Graduate Award**, University of California, Riverside.
June 2018 **Doctoral Consortium Award**, IEEE Computer Vision and Pattern Recognition.
Apr. 2018 **Dissertation Year Program Fellowship Award**, University of California, Riverside.
Oct. 2017 **Graduate Research Symposium Scholarship**, Amazon Research.
Sept. 2014 **Dean's Distinguished Fellowship Award**, University of California, Riverside.
June 2013 **University 2nd Rank in M.S.**, Jadavpur University, India.

Skills

Libraries Pytorch, Keras, Caffe
Programming Python, C/C++
Toolbox/Software MATLAB, OpenCV

Professional Services

Workshop Organizer Multi-Modal Video Analysis and Moments in Time Challenge at European Conference on Computer Vision (ECCV) 2020

Neural Architecture Search and Beyond for Representation Learning at IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020

	Multi-modal Video Analysis and Moments in Time Challenge at International Conference on Computer Vision (ICCV) 2019
Journal Reviewer	IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
	IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
	IEEE Transactions on Information Forensics & Security (TIFS)
	IEEE Transactions on Aerospace & Electronic Systems (TAES)
	IEEE Transactions on Image Processing (TIP)
	IEEE Transactions on Multimedia (TMM)
	IEEE Signal Processing Letters (SPL)
	Elsevier Computer Vision and Image Understanding (CVIU)
	Elsevier Signal Processing: Image Communication (SPIC)
	Elsevier Pattern Recognition (PR)
	Elsevier Pattern Recognition Letters (PRL)
	Springer Machine Vision and Applications (MVAP)
	ACM Computing Surveys (CSUR)
Conference Reviewer	International Conference on Learning Representations (ICLR)
	Conference on Neural Information Processing Systems (NeurIPS)
	International Conference on Machine Learning (ICML)
	Conference on Computer Vision and Pattern Recognition (CVPR)
	International Conference on Computer Vision (ICCV)
	European Conference on Computer Vision (ECCV)
	AAAI Conference on Artificial Intelligence (AAAI)
	Asian Conference on Computer Vision (ACCV)
	Winter Conference on Applications of Computer Vision (WACV)
	British Machine Vision Conference (BMVC)
	International Conference on Image Processing (ICIP)

References

Available on Request.