Aruni RoyChowdhury

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RESEARCH INTERESTS — Semi-supervised learning, domain adaptation, document understanding, object detection, fine-grained recognition.

EDUCATION

University of Massachusetts, Amherst *(2013–2020)*

– MS-PhD in Computer Science

Thesis: Improving Visual Recognition With Unlabeled Data.
Advisor: Erik Learned-Miller.
Committee: Liangliang Cao, Subhransu Maji, David Huber.

West Bengal University of Technology, India *(2009–2013)*

– B.Tech from Heritage Institute of Technology, Kolkata

PROJECTS & EXPERIENCE

Amazon Web Services (AWS), Applied Scientist II

– *Apr. 2020 – current:* researcher in the Textract team.

University of Massachusetts, Amherst, Graduate Research Assistant

– *Sep. 2018 – Dec. 2019:* DARPA Lifelong Learning Machines (L2M) project.
– *Sep. 2014 – Aug. 2018:* Face recognition project under IARPA's Janus program.

Media Analytics, NEC Labs America, Summer Research Assistant

– *May–Aug., 2019:* Deep face recognition using unlabeled data. Mentors: Xiang Yu, Kihyuk Sohn and Manmohan Chandraker.

The Mathworks, Inc., Computer Vision Intern

– *May–Aug., 2017:* Developing object detection modules for the Computer Vision Toolbox. Mentor: Birju Patel.
– *Jun.–Aug., 2014:* Face recognition in MATLAB. Mentor: Dima Lisin.

Indian Statistical Institute, Kolkata, Research Intern

– *Dec., 2011 – Jul., 2013:* Scene text detection and online handwriting recognition. Mentors: Ujjwal Bhattacharya and Swapan K Parui.

Variable Energy Cyclotron Center, Dept. of Atomic Energy (India), Intern

– *Jun.–Jul., 2012:* Analysis of event data using Map-Reduce. Mentor: Amitava Ray.

PUBLICATIONS

According to Google Scholar, as of Dec 2, 2020 my papers have been cited 1846 times with an h-index of 10. Please check Google Scholar for the latest numbers.

1. Matheus Gadelha*, Aruni RoyChowdhury*, Gopal Sharma, Subhransu Maji, Rui Wang, Evangelos Kalogerakis, Liangliang Cao and Erik Learned-Miller. ***Label-efficient Learning on Point Clouds using Approximate Convex Decompositions.*** European Conference on Computer Vision (ECCV), 2020.
2. Aruni RoyChowdhury, Xiang Yu, Kihyuk Sohn, Erik Learned-Miller and Manmohan Chandraker. ***Improving Face Recognition by Clustering Unlabeled Faces in the Wild.*** European Conference on Computer Vision (ECCV), 2020.

3. Aruni RoyChowdhury, Prithvijit Chakrabarty, Ashish Singh, SouYoung Jin, Huaizu Jiang, Liangliang Cao and Erik Learned-Miller. ***Automatic adaptation of object detectors to new domains using self-training***. Computer Vision and Pattern Recognition (CVPR), 2019.
4. SouYoung Jin*, Aruni RoyChowdhury*, Huaizu Jiang, Ashish Singh, Aditya Prasad, Deep Chakraborty and Erik Learned-Miller. ***Unsupervised Hard Example Mining from Videos for Improved Object Detection***. European Conference on Computer Vision (ECCV), 2018.
5. Pia Bideau, Aruni RoyChowdhury, Rakesh Menon and Erik Learned-Miller. ***The Best of Both Worlds: Combining CNNs and geometric constraints for hierarchical motion segmentation***. Computer Vision and Pattern Recognition (CVPR), 2018.
6. Aruni RoyChowdhury, Prakhar Sharma and Erik Learned-Miller. ***Reducing Duplicate Filters in Deep Neural Networks***. NIPS workshop on Deep Learning: Bridging Theory and Practice (DLTP), 2017.
7. Tsung Yu Lin, Aruni RoyChowdhury, Subhransu Maji. ***Bilinear CNNs for Fine-grained Visual Recognition***. IEEE Transactions of Pattern Recognition and Machine Intelligence (PAMI), 2017.
8. Aruni RoyChowdhury, Daniel Sheldon, Subhransu Maji and Erik Learned-Miller. ***Distinguishing Weather Phenomena from Bird Migration Patterns in Radar Imagery***. CVPR workshop on Perception Beyond the Visual Spectrum (PBVS), 2016.
9. Aruni RoyChowdhury, Tsung-Yu Lin, Subhransu Maji and Erik Learned-Miller. ***One-to-many face recognition with bilinear CNNs***. Winter Conference on Applications of Computer Vision (WACV), 2016.
10. E Learned-Miller, G Huang, Aruni RoyChowdhury, H Li, G Hua. ***Labeled Faces in the Wild: A Survey***. Advances in Face Detection and Facial Image Analysis, Springer Heidelberg, 2016 [invited book chapter].
11. Tsung-Yu Lin, Aruni RoyChowdhury and Subhransu Maji. ***Bilinear CNN Models for Fine-grained Visual Recognition***. International Conference on Computer Vision (ICCV), 2015 [**oral**].
12. D Dutta, A Roy Chowdhury, U Bhattacharya, SK Parui. ***Stroke level user-adaptation for stroke order free online handwriting recognition***. International Conference on Frontiers in Handwriting Recognition (ICFHR), 2014.
13. D Dutta, A Roy Chowdhury, U Bhattacharya, SK Parui. ***Building a Personal Handwriting Recognizer on an Android Device***. International Conference on Frontiers in Handwriting Recognition (ICFHR), 2012.
14. A Roy Chowdhury, U Bhattacharya, SK Parui. ***Scene text detection using sparse stroke information and MLP***. International Conference on Pattern Recognition (ICPR), 2012.
15. A Roy Chowdhury, U Bhattacharya, SK Parui. ***Text detection of two major Indian scripts in natural scene images***. ICDAR Workshop on Camera-Based Document Analysis and Recognition (CBDAR), 2011.

Patents

1. Xiang Yu, Manmohan Chandraker, Kihyuk Sohn, Aruni RoyChowdhury. ***Deep Face Recognition based on Clustering over Unlabeled Face Data.*** *(pending)*

Professional Service

- **Reviewing:**
  - Computer Vision and Pattern Recognition (CVPR) 2018, 2019, 2020, 2021.
  - International Conference on Computer Vision (ICCV) 2019.
  - European Conference on Computer Vision (ECCV) 2020.
  - Neural Information Processing Systems (NeurIPS) 2018.
  - Winter Conference on Applications of Computer Vision (WACV) 2021.
  - IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).
  - IEEE Transactions on Image Processing (TIP).
  - Computer Vision and Image Understanding (CVIU).
  - The Visual Computer (TVC), Springer.
  - IEEE Access.
- **Public benchmark:**
  - Maintaining the Face Detection Data Set and Benchmark (FDDB), used as a standard dataset for face detection by the computer vision research community.

Misc. Awards & Grants

- Outstanding Reviewer Award (CVPR 2019)
- Doctoral Consortium and travel award for the International Conference on Computer Vision (ICCV) 2019 in Seoul, Korea.
- UMass CICS Departmental travel grants for ICCV 2019 and CVPR 2019.

Teaching & Mentorship

Fall	2019	Teaching Assistant, CS 670: Graduate Computer Vision
Fall	2016	Guest lecture in Computer Vision, Boston College
Summer	2015	Student Mentor, Research Experience for Undergraduates (REU)
Spring	2014	Teaching Assistant, CS 121: Introduction to Computing
Fall	2013	Teaching Assistant, CS 121: Introduction to Computing

Mentees at UMass: Ashish Singh (now PhD at UMass), Prithvijit Chakraborty (now at Amazon AWS), Mikayla Timm (now at STR).

Software Libraries

Proficient: PyTorch, MatConvNet.
Intermediate: Caffe.