Samarth Mishra

Curriculum Vitae

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Education

2019-Present **PhD Student**, *Computer Science*.
Boston University — Boston, MA
Advisors: ***Prof. Venkatesh Saligrama & Prof. Kate Saenko***

2017-2019 **Master of Science**, *Computer Science*.
Georgia Institute of Technology — Atlanta, GA
Specializing in Machine Learning
Advisor: ***Prof. James M. Rehg***
GPA : **4.0**/4.0

2013-2017 **Bachelor of Technology with Honors**, *Computer Science and Engineering*.
Indian Institute of Technology, Bombay — Mumbai, India
Minor in Electrical Engineering
GPA: **9.46**/10 Minor GPA: 9.5/10

Interests

Computer Vision, Machine Learning

Publications

Samarth Mishra, R. Panda, C. P. Phoo, C.F. Chen, L. Karlinsky, K. Saenko, V. Saligrama, and R.S. Feris. Task2Sim: Towards Effective Pre-training and Transfer from Synthetic Data. *In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pp. 9194-9204. 2022.

D. Bashkirova, D. Hendrycks, D. Kim, H. Liao, **Samarth Mishra**, C. Rajagopalan, K. Saenko, K. Saito, B. U. Tayyab, P. Teterwak, and B. Usman, 2022, July. VisDA-2021 Competition: Universal Domain Adaptation to Improve Performance on Out-of-Distribution Data. *In NeurIPS 2021 Competitions and Demonstrations Track* (pp. 66-79). PMLR.

Samarth Mishra, K. Saenko, V. Saligrama. Surprisingly simple semi-supervised domain adaptation with pretraining and consistency. *British Machine Vision Conference*, 2021.

Samarth Mishra, Z. Zhang, Y. Shen, R. Kumar, V. Saligrama, and B. Plummer. Effectively leveraging attributes for visual similarity. *In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, pages 3904–3909, 2021.

D. Kim, K. Saito, **Samarth Mishra**, S. Sclaroff, K. Saenko, and B. Plummer. Self-supervised visual attribute learning for fashion compatibility. *In Proceedings of the IEEE/CVF International Conference on Computer Vision*, pages 1057–1066, 2021

P. Zhu, R. Zhu, **Samarth Mishra**, and V. Saligrama. Low dimensional visual attributes: An interpretable image encoding. *In International Conference on Pattern Recognition*, pages 90–102. Springer, 2021.

S. Stojanov, **Samarth Mishra**, N. A. Thai, N. Dhanda, A. Humayun, C. Yu, L. B. Smith,and J. M. Rehg. Incremental object learning from contiguous views **(Oral)**. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* pages 8777–8786, 2019.

K. Chatterjee, B. Kragl, **Samarth Mishra**, and A. Pavlogiannis. Faster algorithms for weighted recursive state machines. In *European Symposium on Programming*, pages 287–313. Springer, 2017.

Preprints

Samarth Mishra, P. Zhu, and V. Saligrama. Learning Compositional Representations for Effective Low-Shot Generalization. *arXiv preprint* arXiv:2204.08090 (2022).

Fellowships and Awards

Awards
- **Institute Academic Prize**, IIT Bombay — 10 students in a batch of 880 — 2014
- **All India Rank 30** in JEE-Main among 1.3 million candidates — 2013
- Gold medal, **Indian National Physics Olympiad** — ***top 35*** in India — 2013
- Indian National **Chemistry and Astronomy** Olympiads — top 1% in India — 2013

Fellowships
- **Dean's Fellowship**, Boston University — 2019
- **PM's Trophy Scholarship**, awarded by Steel Authority of India Ltd. — 2013-17
- Kishore Vaigyanik Protsahan Yojana (**KVPY**) scholar : **All India Rank 27** — 2012-13
- National Talent Search Examination (**NTSE**) scholar — 2009-12

Experience

Summer 2021, 2022 — **Research Intern**.
MIT-IBM Watson AI Lab
Explored properties of good synthetic data for pre-training representations for transfer to downstream visual recognition tasks.

2019-Present — **Graduate Student Researcher**.
Boston University
Working on visual domain adaptation, few-shot and zero-shot recognition and image similarity metric learning with Profs. Venkatesh Saligrama, Bryan Plummer and Kate Saenko.

2017-2019 — **Graduate Student Researcher**.
Georgia Institute of Technology — *Guided by : Prof. James M. Rehg*
- **Incremental Object Learning**: Introduced a new synthetic data generating environment and a 3D object dataset for incremental object learning. Established the importance of repetition in mitigating catastrophic forgetting. Paper accepted for oral presentation at CVPR 2019.
- **Discriminative 3D Shape Representations** : Worked on learning discriminative and generalizable 3D shape representations via the task of learning single view 3D object reconstruction.

Summer 2018 — **MTS Intern–Machine Learning**.
Nutanix Inc., San Jose, CA
Researched techniques and developed a system for handling natural language queries on a subset of Nutanix's multi-cluster management database using semantic parsing and machine learning, and a method for easy annotation of data

Fall 2016 — **Bachelor's Thesis**.
IIT Bombay — *Guided by: Prof. Suyash P. Awate*
Developed a kernel dictionary learning method on spherical manifolds for application to image classification and denoising tasks. Explored regularizations for classification robustness to different kinds and intensities of image noise.

Summer 2016 — **Software Engineering Intern**.
Samsung HQ, Seoul, Korea
Developed a Tizen3.0 application for process monitoring via log parsing. Features include a user friendly UI, notification alerts, active response to misbehaving processes and capability for easy integration into Samsung's smart home server.

Fall 2015 **RnD Project**.
IIT Bombay *Guided by: Prof. Krishna S.*
On equilibria in sequential non-competitive multiplayer games on timed automata. Considering only memoryless player strategies, proved undecidability of the existence of a cost bounded Nash, Stackelberg or Incentive equilibrium in a 2 player sequential timed game with 3 clocks.

Summer 2015 **Visiting Student Researcher**.
IST Austria *Guided by: Prof. Krishnendu Chatterjee*
Implemented weighted Recursive State Machines (RSMs) and the proposed fast reachability algorithms. Empirically demonstrated, on the SLAM/SDV benchmarks, algorithmic speed improvements over jMoped, a tool for interprocedural analysis. Work published in ESOP'17.

Teaching

Boston University

Spring 2020 CS 591 : *Deep Learning* *Instructor: Prof. Kate Saenko*

Georgia Tech

Spring 2019 CS 6601 : *Artificial Intelligence* *Instructor: Prof. Thad Starner*
Fall 2018 CS 6601 : *Artificial Intelligence* *Instructor: Prof. Thad Starner*
Spring 2018 CS 3600 : *Intro to Artificial Intelligence* *Instructor: Prof. James M. Rehg*

IIT Bombay

Spring 2017 CS 224 : *Computer Networks* *Instructor: Prof. Varsha Apte*
Fall 2015 CS 101 : *Intro to Computer Programming* *Instructor: Prof. Varsha Apte*
Spring 2015 MA 106 : *Linear Algebra* *Instructor: Prof. Manoj K. Keshari*

Leadership and Organizational Experience

2022 **VisDA22 Competition : ZeroWaste Segmentation challenge**.
Part of the NeurIPS'22 competition organizing team.

2021 **VisDA21 Competition : Universal Domain Adaptation**.
Part of the NeurIPS'21 competition organizing team.

Spring 2021 **BU CV Reading Group**.
Organized a virtual series of seminars for discussion of recent computer vision research.

2016-17 **Department Placement Coordinator, IIT Bombay**.
Organized and ensured smooth execution of department level placement preparation activities and assisted students at all stages of the placement procedure.

Reviewer

WACV-2021, AAAI-2021, CVPR-2021, ECCV-2022, NeurIPS-2022

Technical Skills

Languages Python | C | C++ | Java | MATLAB | Bash | HTML | Javascript | CSS | LaTeX 2$_\varepsilon$
Technologies PyTorch | Tensorflow | Blender | Numpy | CUDA | Hadoop | Pig | Spark | D3 | Elasticsearch

Relevant Coursework

BU Towards Universal Natural Language Understanding, Reinforcement Learning, Statistical Learning Theory
Georgia Tech Machine Learning, Numerical Linear Algebra, Machine Learning Theory
IIT Bombay Advanced Machine Learning (Probabilistic Graphical Models and Deep Learning), Algorithms in Medical Image Processing, Digital Image Processing, Foundations of Learning Agents
Udacity Computer Vision, Deep Learning