Samarth Mishra

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Education

- **Georgia Institute of Technology** — ***Atlanta, GA***
  Masters *in CS with specialisation in ML* (GPA : 4.0) Expected May 2019
  Advisor : Prof. James M. Rehg
- **Indian Institute of Technology, Bombay** — ***Mumbai, India***
  B. Tech *(Honors) in CS and Minor in EE* (GPA : 9.46/10) 2013-2017

Work Experience

MTS - Intern (Machine Learning) — ***Nutanix Inc., San Jose*** Summer 2018
Researched techniques and laid the foundations of a system for handling **natural language queries** on a multi-cluster management database using **semantic parsing** and **machine learning** methods

Software Engineering Intern — ***Samsung HQ, Seoul*** Summer 2016
Developed a **mobile application** on Tizen3.0 OS for **process monitoring** via **log parsing**, with a user friendly UI, notification alerts and active responses for misbehaving processes

Visiting Scientist — ***IST Austria*** Summer 2015
Implemented a **fast reachability algorithm** on weighted recursive state machines(RSMs) with finite height semiring weights. Established significant speed improvements over jMoped

Teaching

- ***Graduate Teaching Assistant*** for AI at Georgia Tech (Spring 2018, Fall 2018)
- ***Teaching Assistant*** for 3 classes in CS and Math at IIT Bombay : (2015-17)
  Computer Networks, Intro to Computer Programming, Intro to Linear Algebra

Projects

Self-Directed Incremental Learning *(Master's Project)* *Fall 2017 - Present*
Developed a **new dataset** of rendered objects, for **incremental object recognition** learning. Established baselines and studied ablations for incremental learning methods in the novel problem setting of **self-directed learning**. Working on mitigating the **catastrophic forgetting** problem via a **robust feature representation** learning. In preparation for submission to CVPR'19

GPGPU solutions for Linear Least Squares Problem *Spring 2018*
Implemented the following general purpose GPU (GPGPU) solutions for the linear least squares problem and compared with the corresponding CPU implementations : **Householder** QR decomposition, **Cholesky** decompostion and **Givens** QR decompostion

Kernel Dictionary Learning *(Bachelor's Thesis)* 2016-17
Implemented **kernel dictionary learning** on **spherical manifold** and compared against a euclidean baseline. Studied the effect of different **regularizers**. Performed ablation studies on an **image classification** task for different image noise levels and varying regularization parameters

Medical Image Segmentation : DeepCut Spring 2017
Implemented **DeepCut** image segmentation algorithm and used it to segment out the heart from human chest MR images. Used a **conv net** for soft segmentation and a **dense CRF** for regularization.

Reinforcement Learning : Carrom playing bot Fall 2016
Implemented and evaluated three different strategies (**deep Q-learning**, **deep deterministic policy gradients**, and **hand coding heuristics**) for building a carrom playing bot

Equillibria in multiplayer timed games *(RnD project)* Fall 2015
Proved undecidability of determining the existence of cost-bounded (**Nash**, **Stackelberg** or **Incentive**) equilibrium for a timed multiplayer non-competetive game with 3 or more clocks

Skills

- **Launguages :** C | C++ | Java | Python | MATLAB | Bash | HTML | Javascript | CSS | LaTeX 2_ε
- **Technologies :** PyTorch | Tensorflow | CUDA | Numpy | Hadoop | Pig | Spark | D3 | Elasticsearch

Publications

Krishnendu Chatterjee, Bernhard Kragl, *Samarth Mishra*, Andreas Pavlogiannis:
Faster Algorithms for Weighted Recursive State Machines.
26th European Symposium on Programming (ESOP), 2017

Achievements and Awards

- Awarded **Institute Academic Prize**, IIT Bombay 2014
- **All India Rank 30** in JEE-Main among 1.3 million candidates 2013
- Gold medal in **Indian National Physics Olympiad** for being among ***top 35*** in India 2013
- **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

Other Activities

- Department placement coordinator for department of CSE, IIT Bombay, 2016-17
- Web and Coding Club Hackathon, IIT Bombay 2014 : built an ad-removing chrome extension
- Semi-finalist, Prof. Brahm Prakash Memorial Materials Quiz, IIM Kalpakkam, 2012