

# Samarth Mishra

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## EDUCATION

- **Georgia Institute of Technology** *Atlanta, GA*  
*Masters in CS with specialisation in ML* (GPA : 4.0/4) 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

## EXPERIENCE

- Graduate Student Researcher** *Georgia Tech* Ongoing  
Research on **Computer Vision** and **Deep Learning** with Prof. James M. Rehg:
  - **Incremental Object Learning** (under review): Introduced a new synthetic data generating environment and a 3D object dataset for incremental object learning. Established importance of repetition in incremental learning and introduced the paradigm of weak supervision along with a baseline solution.
  - **Discriminative 3D Shape Representations** : Working on learning discriminative 3D shape representations from multiple object views without explicit class supervision. In preparation for ICCV'19
- MTS - Intern (Machine Learning)** *Nutanix Inc.* Summer 2018  
Established a proof of concept for using **semantic parsing** and **machine learning** to handle **natural language queries** on a subset of Nutanix's multi-cluster management database.
- Software Engineering Intern** *Samsung* 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 Student Researcher** *IST Austria* Summer 2015  
Implemented a **fast reachability algorithm** on weighted recursive state machines(RSMs) with finite height semiring weights. Established significant speed improvement over jMoped on SLAM/SDV
- Teaching**
  - **Graduate Teaching Assistant** for AI at Georgia Tech (Spring 2018 - Spring 2019)
  - **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

- 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** decomposition and **Givens** QR decomposition
- Kernel Dictionary Learning** *(Bachelor's Thesis)* 2016-17  
Implemented **kernel dictionary learning** on a **spherical manifold**. Studied the effect of different **regularizers** and **kernels**, on robustness in **classification** performance of the algorithm, under different kinds and intensities of noise, on MNIST handwritten digits dataset
- 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
- Equilibria 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

- **Languages** : C | C++ | Java | Python | MATLAB | Bash | HTML | Javascript | CSS | L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>
- **Technologies** : PyTorch | Tensorflow | Theano | CUDA | Blender | Numpy | Hadoop | Pig | Spark

## 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