Samarth Mishra

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Education

- **Georgia Institute of Technology** — ***Atlanta, GA***
  Masters *in CS with specialisation in ML* — Expected December 2018
- **Indian Institute of Technology, Bombay** — ***Mumbai, India***
  B. Tech *(Honors) in CS and Minor in EE* (GPA : 9.46/10) — 2013-2017

Work Experience

Software Engineering Intern — ***Samsung HQ, Seoul*** — Summer 2016

- Ported a host based instrusion detection system for linux onto Samsung's Tizen OS
- Developed an application for **Tizen3.0** for **process monitoring** via **log parsing**
- App features a user-friendly UI, notification alerts and active response to misbehaving processes

Visiting Scientist — ***IST Austria*** — Summer 2015

- Built an implementation for **weighted recursive state machines** (RSMs)
- Implemented a **reachability algorithm** on RSMs with finite-height semiring weights
- Established significant **speed improvement** over jMoped. Results published in **ESOP '17**

Teaching Assistant — ***IIT Bombay*** — 2015-17

Teaching Assistant for 3 courses in Computer Science and Mathematics at IIT Bombay : Computer Networks, Intro to Computer Programming, Intro to Linear Algebra

Placement Coordinator — ***Dept of CS, IIT Bombay*** — 2016-17

Elected by students of department of computer science, IIT Bombay. Conducted informatory and preparatory sessions such as resume making, interview prep, coding tests, etc.

Key Academic Projects

Developmental Deep Learning *(Special Problem)* — *Ongoing*

- Comparing learning for object recognition in modern deep nets with learning in human babies
- Extending previous work on iterative machine teaching to come up with optimal learning sequences
- Coming up with a simple stochastic model for generating object sequences

Kernel Dictionary Learning *(B.Tech Thesis)* — 2016-17

- Implemented kernel dictionary learning on spherical manifold. Compared vs a euclidean baseline
- Experimented with different **regularizers** like different **p-norms**, **graph regularization**
- **Analysed data** from different experiments to **demonstrate trends** indicated by theory

Medical Image Segmentation : DeepCut — Spring 2017

- Implemented **deepcut** to segment out heart from chest MR images
- Used a **conv net** to learn soft segmentation from user provided bounding box annotations
- Employed a **dense CRF** to **regularize**, and find hard segmentation using **graph cut**

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 and Interests

- **Software skills :** C | C++ | Java | Python | MATLAB | LaTeX 2_ε | HTML | Javascript | CSS | Numpy | Pandas | Tensorflow | Git | Bash | Hadoop | Pig | Spark | D3
- Interested in Machine Learning, Artificial Intelligence, Computer Vision
- Trained in Indian classical vocal music. Can play basic guitar

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

Extra-Curricular Activities

- Web and Coding Club Hackathon, 2014 : built an ad-removing chrome extension
- 3^{rd} position in Entertainment Quiz, Freshiezza, IIT Bombay 2013
- Semi-finalist, Prof. Brahm Prakash Memorial Materials Quiz, IIM Kalpakkam, 2012