

# SANYAM KAPOOR

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## EDUCATION

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- New York University** (*Courant Institute of Mathematical Sciences*) Sept 2017 - present  
Masters in Computer Science, GPA: **3.91/4.0**
- **Masters Thesis/Research Fellowship** (awarded to 2 students), Fall 2018
- Indian Institute of Technology (IIT) Hyderabad, India** Aug 2012 - May 2016  
Bachelors in Computer Science and Engineering, **GPA: 8.62/10.0** (top 10)
- **TODAI Award, University of Tokyo** for outstanding academic performance, 2013
  - **Academic Excellence Award** for highest Semester GPA, 2012

## RESEARCH EXPERIENCE

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- Multitask Learning with Clinical Time Series Data** Oct 2018 - present  
*Advisor: Rajesh Ranganath*
- Identified critical prediction tasks in clinical healthcare using time series data
  - Implemented models to predict in-hospital mortality, decompensation, length of stay & phenotypes
- Improving MCMC Sampling using Reinforcement Learning** Sept 2018 - present  
*Advisor: Joan Bruna and Cinjon Resnick*
- Investigated key failures of modern Monte Carlo sampling techniques like Hamiltonian Monte Carlo
  - Proposed new model-free algorithm to improve *mixing time* of Markov chains
- Zero-sum Games in Cooperative Multi-Agent Environments** Mar 2018 - May 2018  
*Advisor: Joan Bruna and Cinjon Resnick*
- Proposed and implemented novel Reinforcement Learning agents based on Q-Learning
  - Investigated problems in modeling teammates/opponents in a non-stationary environment
- Machine Learning for Predicting Protein Structures** Jan 2018 - May 2018  
*Advisor: Rob Fergus and Alexander Rives*
- Reverse engineered GROMACS C++ source to serve as reward function for protein chain states
  - Implemented Monte-Carlo based algorithm for stochastic exploration of molecule topology space

## PUBLICATIONS

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- \*Resnick, C., \*Raileanu, R., **Kapoor, S.**, Peysakhovich, A., Cho, K., and Bruna, J. Backplay: “Man muss immer umkehren”. 2018 (*in review*)
- **Kapoor, S.** Multi-agent reinforcement learning: A report on challenges and approaches, 2018

## PROFESSIONAL EXPERIENCE

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- Software Engineering Intern, Google Sunnyvale, CA (google.com)** May 2018 - Aug 2018
- Implemented an end-to-end Natural Language Code Search example on Kubeflow (Cloud AI)
  - Designed and implemented Apache Beam Pipelines and Neural Network modules using TensorFlow
  - Demo proposal accepted to KubeCon North America 2018
- Software Engineer, Headout Bengaluru, India (headout.com)** Dec 2016 - Jul 2017
- Led internal developer tooling, reduced developer on-boarding from days to half an hour
  - Executed migration to a CI/CD infrastructure for automated deployments based on Docker and AWS, slashed application rollback downtime by 100%
  - Designed A/B experiments for new features on the website
- Co-Founder, StoryXpress, Hyderabad, India (storyxpress.co)** May 2013 - Aug 2016
- Co-founded the cloud video service for large scale ad creation from static media
  - Designed and implemented an in-house Video Rendering Engine on top of OpenGL, generated 2000+ videos per month
  - Delivered enterprise APIs and Web Application for enterprises like Target

## TEACHING EXPERIENCE

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**Section Leader** for *Inference and Representation* by Joan Bruna, NYU, Fall 2018

**Grader** for *Introduction to Machine Learning* by Iddo Drori, NYU, Fall 2018

**Recitation Leader** for *Data Structures* by Anasse Bari, NYU, Spring 2018

**Grader** for *Machine Learning and Computational Statistics* by David Rosenberg, NYU, Spring 2018

## HONORS AND AWARDS

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**StackOverflow Top Contributor**, top 7% among 9.5+ million members, 2018

**NASSCOM Emerge 50**, *StoryXpress* among 500+ startups across India for innovation impact, 2015

**HYSEA Best Software Product, Student Innovation**, *StoryXpress* among 100+ startups, 2015

**Microsoft Build the Shield, India**, First Runner Up among 280 teams, 2015

**ACM ICPC Amritapuri Regionals** finalist among 1500+ teams, 2013

## OTHER PROJECTS

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**TorchRL** - Scalable Reinforcement Learning framework in PyTorch with modular implementations of algorithms like DQN, A2C, PPO, DDPG

**MariaDB Scheduler** - Proof-of-Concept on top of DC/OS based on a very early-stage framework

**Docker Consul** - Docker container with networking tweaks for quorum management. 25000+ pulls.

**QuickSlots v2.0** - Timetable Scheduler modeled as Min-Cost Bipartite Matching Problem

**COOL Compiler** - Lexing, Parsing and Semantic Phases for the Classroom Object Oriented Language

## TECHNICAL SKILLS

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**Programming Languages:** Python, C, C++, Node, Java, Go

**Technologies:** PyTorch, Scikit-learn, TensorFlow, MySQL, React, Docker, Ansible, Vagrant, OpenCV, OpenGL