

TARUN GUPTA

📍 tarun018 · 🏠 tarungupta.in · ✉ tarun1995gupta@gmail.com

RESEARCH INTERESTS

Robotics, Reinforcement Learning, Meta Learning, Transfer Learning, Multi-Agent Systems, Optimization Methods, Probabilistic Graphical Models, Sequential Decision-Making, Deep Learning

EDUCATION

International Institute of Information Technology, Hyderabad 2014 - 2018

B.Tech (Honors) and MS by Research in Computer Science and Engineering CGPA - **9.32/10**
Batch Topper

Master's Thesis: Scalable Planning and Learning For Decentralized MDPs With Event Driven Rewards

Advisor: Prof. Praveen Paruchuri, Machine Learning Lab, IIIT Hyderabad, India

Co-Advisor: Prof. Akshat Kumar, Singapore Management University, Singapore

Dhirubhai Ambani Institute of Information and Communication Technology 2012 - 2014

B.Tech in Information and Communication Technology (Transferred to IIIT in 2014) CGPA - **8.02/10**

ACHIEVEMENTS & HONORS

- **Gold Medalist for the highest GPA** in the graduating batch.
- **Google India, Microsoft India and AAI Scholarship** travel grant to attend **AAAI 2018**.
- Awarded **Deans Academic Merit list** that is awarded to **top 5% students** consistently.
- Awarded **CBSE Merit** for AISSE secondary school exam for achieving 10/10 CGPA.
- Team ranked **131st** at the **2014 ACM ICPC Kharagpur** online round out of over 600 teams.

PUBLICATIONS

Tarun Gupta, Akshat Kumar, and Praveen Paruchuri. *Successor Features Based Multi-Agent RL for Event-Based Decentralized MDPs*. **AAAI. 2019**. [PDF][Acceptance Rate: 16.2%]

Tarun Gupta, Akshat Kumar, and Praveen Paruchuri. *Planning and Learning For Decentralized MDPs With Event Driven Rewards*. **AAAI. 2018, Oral**. [PDF][Oral Acceptance Rate: 10.9%]

Tarun Gupta, Akshat Kumar, and Praveen Paruchuri. *Planning and Learning For Decentralized MDPs With Event Driven Rewards*. **Workshop on Planning and Inference. AAI. 2018**. [PDF]

Tarun Gupta. *Scalable Planning and Learning For Decentralized MDPs With Event Driven Rewards*. **M.S. Thesis. 2018**. [PDF]

WORK EXPERIENCE

Singapore Management University — Research Engineer Jul'18 - Jul'19
School of Information Systems, Singapore

- Developing state of the art Reinforcement Learning (RL) algorithms to achieve scalable and generic learning across different environments in multi-agent systems.
- Developed new multi-agent RL approach using successor features which achieves up to 50% better results than existing approaches and allows knowledge transfer to achieve generic learning.

Machine Learning Lab, IIIT Hyderabad — Research Assistant Aug'17 - Jun'18

- Worked on improving scalability of multi-agent planning algorithms for applicability to real world domains through a synthesis of rigorous techniques from multiple sub-areas of artificial intelligence, machine learning and optimization methods.

IIIT Hyderabad — Teaching Assistant Aug'15 - Jun'18

Conducting tutorial sessions and responsible for grading quizzes, assignments and examinations.

- Multi-Agent Systems — Prof. Praveen Paruchuri Monsoon'17
- Optimization Methods — Prof. Sujit Gujar Spring'17
- Statistical Methods in Artificial Intelligence — Prof. Avinash Sharma Monsoon'16
- Artificial Intelligence — Prof. Praveen Paruchuri Spring'16
- Structured System Analysis and Design — Prof. Raghu Reddy Monsoon'15

Google Summer of Code'17 — Software Engineering Intern ·  ·  *May'17 - Aug'17*
XMPP Standards Foundation

- Implemented client side experimental features for Swift IM (an open-source XMPP client for instant messaging (IM) and multi-user chat) such as querying MIX server for hosted chat rooms, joining and leaving chat rooms, querying for publish-subscribe nodes, syncing different clients of the same user, presence updates of users and sending/receiving messages to other participants in the chat room.
- Worked with people from 4 different countries at the same time resolving development and production issues. Tested developmental code thoroughly with unit and integration testing. Improved the test coverage of the C++ XMPP library (Swiften).

Google Summer of Code'15 — Software Engineering Intern ·  ·  *May'15 - Aug'15*
XMPP Standards Foundation

- Designed and implemented parts such as the elements, their parsers and serializers of XMPP protocol adding features for VCards, Internationalized Domain Name, Multi-User Chat.

SELECTED MAJOR PROJECTS

Cloud Orchestration Layer ·  *Python, Flask, Ceph, Libvirt, MongoDB*

- Built a framework similar to Amazon EC2 console that can coordinate the provisioning of compute and storage resources by negotiating with a set of hypervisors running across physical servers in the datacenter.

Mobile Security in Cloud ·  *Java, Android, Maven, GWT, Jersey*

- Designed a Cloud Framework that allows mobile phones to post images on a regular basis and also retrieve the images to the end user with minimal delay.

AI for Ultimate Tic Tac Toe ·  *Artificial Intelligence, Python*

- An Automated AI based Player for Ultimate Tic Toe implemented in Python using Greedy Heuristic based Alpha Beta Pruning and Depth Optimization.

Human Activity Recognition ·  *Artificial Intelligence, Python*

- Classify human actions into six different categories from smartphone sensor data using pre-processed data from a smartphone accelerometer and Support Vector Machine (SVM) to classify the actions.

Database Query Engine ·  *Python*

- Implemented a SQL query parser and executor to manipulate data in csv files that can run a subset of SQL queries (select, from, where, aggregate functions, join)

SKILLS

Programming Languages: Java, Python, C++, C

Libraries & Frameworks: Theano, Tensorflow, Scikit-learn, Keras

Web Technologies: Web2py, Flask, Javascript, HTML/CSS

Other Tools: Git, MongoDB, SQL, LATEX

RELEVANT COURSEWORK

UNDERGRADUATE

Artificial Intelligence
 Cloud Computing
 Computer Networks & Operating Systems
 Algorithms & Data Structures
 Database Systems

GRADUATE

Machine Learning
 Multi-Agent Systems
 Optimization Methods
 Advanced Computer Networks