

# Aditya Sharma

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## CONTACT INFORMATION

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## EDUCATION

**Birla Institute of Technology and Science**, Pilani, India

*B.E. (hons.) Electrical and Electronics Engineering, (August 2012 - June 2016)*

Thesis Topic: “**Asynchronous Distributed Stochastic Convex Optimization in MPI**”

Advisors: Dr Partha Talukdar (IISc), Dr Ashish Mishra (BITS, Pilani)

## PUBLICATIONS

Aditya Sharma, Apoorv Saxena, Chitrang Gupta, Seyed Mehran Kazemi, Partha Talukdar, Soumen Chakrabarti. “*TwIRGCN: Temporally Weighted Graph Convolution for Question Answering over Temporal Knowledge Graphs.*” **EACL, 2023.**

Chandrabhas, Aditya Sharma, Partha Talukdar. “*Towards Understanding the Geometry of Knowledge Graph Embeddings.*” **ACL, 2018.**

Aditya Sharma, Zarana Parekh, Partha Talukdar. “*Speeding up Reinforcement Learning-based Information Extraction Training using Asynchronous Methods.*” **EMNLP, 2017.**

Aditya Sharma, Pranet Verma, Ashish Mishra, K. Solomon Raju. “*A Modular Approach to Random Task Graph Generation.*” *Indian Journal of Science and Technology*, 2016.

## REVIEWER

**EMNLP 2022, ACL 2023**

## HONOURS AND AWARDS

Recipient of the **Intuit Research Fellowship** (2017 - 2019).

Awarded a *\$1000 Travel Scholarship* to attend the **International Conference on Empirical Methods in NLP (EMNLP 2017) at Copenhagen, Denmark, 2017.**

**Top 10** finish in the famed **Allen Ai Science Challenge on Kaggle, 2016.**

Invited to attend the **29th Annual AIAA/USU Conference on Small Satellites at Utah, USA** on a *\$2400 Travel Award*, 2015.

## PROFESSIONAL EXPERIENCE

**IIT Bombay, Mumbai, India**

**Advisor: Dr Soumen Chakrabarti**

*Project Research Assistant*

**July, 2022 - Present**

\* Collaborating with **Google Research** on helping machines do better **temporal reasoning**, extending our previous work on temporal question answering (**TwIRGCN - EACL 2023**).

\* Working with **IBM Research, India** on open domain **question answering over multi-modal data** (tables + text).

**Indian Institute of Science, Bangalore, India**

**Advisor: Dr Partha Talukdar**

*Research Masters Candidate*

**July, 2017 - November, 2021**

*Dept of Computational and Data Sciences (CDS)*

\* Used the **geometry of created vector spaces** to analyze different **KG embedding methods** where we found **principled differences** in the vector spaces of models with an **additive score**

function like TransE and ones with a **multiplicative** score function like ComplEx. This work got published in **ACL 2018**.

\* Did courses on Deep Learning (DL) for NLP, DL for Computer Vision, Machine Learning with Large Datasets, Optimization and Data Analytics.

**Intuit IDC, Bangalore, India**

*Tech Futures Team*

*Summer Research Intern*

**May, 2019 - July, 2019**

Built an unsupervised **query focused summarization** system to create targeted summaries from Google News articles.

**Intuit IDC, Bangalore, India**

*Tech Futures Team*

*Summer Research Intern*

**June, 2018 - July, 2018**

Worked on building an **adversarial reinforcement learning based conversational agent** for automating Intuit's Customer Care using **TensorFlow**.

**Indian Institute of Science, Bangalore, India**

*MALL Lab, Department of Computational and Data Sciences (CDS)*

*Research Assistant*

**August, 2016 - June, 2017**

Worked with **Dr Partha Talukdar** on applications of **Deep Reinforcement Learning in NLP**. Specifically, worked on automating parts of the Knowledge Graph generation pipeline and adapted the **actor critic model for information extraction**. Published in **EMNLP 2017**.

**CERN (European Organization for Nuclear Research), Geneva, Switzerland**

*Intern (Google Summer of Code)*

**May, 2016 - August, 2016**

Added support for **compressed Deep Neural Networks along the lines of HashedNets to ROOT**, an open source software for data analysis used by the High Energy Physics community.

**Indian Institute of Science, Bangalore, India**

*MALL Lab, Department of Computational and Data Sciences (CDS)*

*Undergraduate Thesis Intern*

**December, 2015 - May, 2016**

*Summer Research Intern*

**May, 2015 - July, 2015**

\* Implemented **distributed Representation Learning** models for NLP on the *Cray XC40* supercomputer *SahasraT* (fastest in India at the time) using MPI-OpenMP.

\* Worked with **Dr Partha Talukdar** on **asynchronous parallel implementation** of convex optimization algorithm Stochastic Gradient Descent (**SGD**). Developed a **Parameter Server** infrastructure on Cray XC40, **from scratch in MPI**.

## PROJECTS

**BITS Pilani Student Satellite Team - Anant**

*Co-founder and Team Leader*

**November, 2013 - October, 2015**

\* Lead a team of 20 students to build a low-cost **hyperspectral imaging 3U CubeSat** weighing less than 10 kg.

\* Engineered an FPGA-based System-on-Chip low-power, high-performance **data processor** and architected the **flight software for the satellite** from the ground up.

## COURSES

**Deep Learning for NLP, Deep Learning for Computer Vision**, Machine Learning, Data Analytics, Parallel Computing, Hardware Software Co-design, Probability and Statistics, Optimization, Linear Algebra.