



## Undergraduate Study

Program	Institution	CGPA	Branch Rank
Bachelor of Technology (2015-2019) Computer Science and Engineering	Indian Institute of Technology Madras Chennai	9.75/10	2/61

## Key Projects

### Neural Question-Answering Framework for Plots: FigureNet

Prof. Mitesh M. Khapra

Accepted at Humanizing AI Workshop, IJCAI 2018

Dec 2017–Aug 2018

- Created a **novel architecture** comprising depth-wise, 1-D convolutions and LSTMs for question-answering on scientific plots
- Achieved **state-of-the-art accuracy** (83.95%) on [FigureQA Dataset](#) (Maluuba-Microsoft), bettering [Relational Networks](#) (Google DeepMind) by **8.53%** and reducing the training time by **93%** with **75%** lesser computational resources
- **Co-authored** a [paper](#) which was **accepted and presented** at Humanizing AI Workshop, IJCAI 2018, Stockholm, Sweden

### Information Retrieval using Generative Adversarial Networks

Prof. Mitesh M. Khapra

Under Review as a conference paper at ICLR 2019

Aug 2018–Present

- **Identified issues** with the policy gradient formulation in IRGAN, an adversarial framework for Information Retrieval
- Theoretically corroborated the issues with baseline term and **explained the problematic loss functions** using the same
- Proposed the use of **co-training** and achieved **better or equal performance** in 60% lesser time on all three tasks in IRGAN
- **Primary author** of a [technical paper](#) which is under review as a **conference paper at ICLR 2019**, New Orleans

### Leveraging Ontological Knowledge for Neural Language Models

Prof. Sutanu Chakraborti

Under Review at Young Researchers' Symposium, CoDS-COMAD 2019

Mar 2018–May 2018

- Achieved **higher performance** (5%) and **faster convergence** (35%) in Word2Vec by using WordNet for weight-initialization
- Performed domain-transfer of vectors with the [RCM](#) model and WordNet [Domain](#), and portrayed enhanced semantic similarity
- Proposed HRCM model and H-Ordinal Constraints for **hierarchy aware vectors** which can settle the data-knowledge trade-off

### Prioritized Hindsight Experience Replay: Learning from crucial mistakes

Prof. Balaraman Ravindran

arXiv Article

Jan 2018–May 2018

- Augmented Hindsight Experience Replay ([HER](#)) with various versions of Rank-Based Prioritized Experience Replay ([PER](#))
- Created an efficient **open source implementation** of Rank-Based PER which reduced running time by **90%** for large buffer sizes
- Proposed the use of linearly attenuated goal sampling which yielded **faster convergence** when compared to uniform sampling
- **Authored** an arXiv [article](#) documenting both useful and failed modifications of P-HER, for easier extensions in the future

## Professional Experience

### Microsoft India (R&D) Pvt Ltd.

Hyderabad

Software Engineering Intern

May 2018–July 2018

- **Migrated** the core component of Microsoft Azure's Real Time VM Replication service used for **Business continuity and disaster recovery** (BCDR) to Azure Service Fabric, a **Microservices framework**, to enable **faster scale-in and scale-out**
- De-coupled the core component by creating **consistent** and **exclusive** storage structures which helped improve **parallelization**
- **Reduced CPU usage by 57%** after hosting the service and achieved close to production performance

### Wipro Limited

Bengaluru

Summer Intern

May 2017–July 2017

- Used **Hierarchical Classification** (HC) to organize documents, achieving **higher accuracies** than flat classification approaches
- Proposed the use of novel **Evaluation Metrics** for HC which helped gain deeper insights into how **different models** performed
- Performed **Term Clustering** based on the corpus and **WordNet** similarities to **induce hierarchies** in a semi-supervised setting
- **Authored** an organization-wide [POV-Paper](#) highlighting the **technical and business aspects** of Hierarchical Classification

### Godot Media

Bengaluru

Product Development Intern

December 2016

- Developed an algorithm—to refine and improve **content recommendation routines** for articles—which went **into production**
- Performed **topic modeling** and **introduced features** pertaining to trends and source credibility for **improved** recommendation

## Selected Course Projects

### Inducing Hierarchy in Options Framework by using Imitation Learning

Prof. Balaraman Ravindran

Aug 2018–Present

- Proposed the use of a **generative approach** to learn options on various reinforcement learning environments
- Developed a **proof-of-concept** for integrating **MLSH** and option discovery to directly **optimize for transfer learning**
- Created and **collated** a set of evaluation metrics to **fill the dearth** of methods for comparing hierarchies learned using options

## GPU Assisted Scheduling

Prof. D. Janakiram

Sept 2017–Nov 2017

- Used **K-Means** and **Genetic algorithms** to dynamically determine hardware parameters **crucial** for the **OS Load Balancer**
- The parameters determined using the **GPU** enable **optimal** resource allocation and **load balancing** in **Multi-core** machines
- **Increased throughput** by following a schedule to **minimize** the number of invocations of the GPU load balancer

## Minijava Compiler

Prof. V. Krishna Nandivada

Mar 2018–May 2018

- Realized an **optimizing compiler** for MiniJava (a subset of Java) by implementing and combining the Type Checker, IR Generator, Register Allocator and MIPS Code generator using Flex, Bison, JTB and JavaCC

## Scholastic Achievements

- o Awarded the **Huawei (MCM) scholarship** for securing **Branch Rank 2** among 61 students (B.Tech+Dual Degree) of CSE
- o **All India Rank - 122** in **JEE (Advanced) 2015**, taken by 13 lakh students (99.99 percentile) and **first** rank in Karnataka
- o Won a **Silver Medal** in the **International Chemistry Olympiad 2015**, Azerbaijan (representing India) contested by 80 countries
- o **All India Rank - 18** in **KVPY 2014**, taken by **2 lakh students**; awarded **NTSE Scholarship** by N.C.E.R.T in 2013
- o **All India Rank - 160** in Round 1 of **ACM-ICPC** International Collegiate Programming Contest 2016
- o Received the government's **McM scholarship** for being among the **top 10** out of 850 students admitted to IIT Madras in 2015

## Talks and Presentations

### Deep Learning Master Class

September 2018

Conducted classes covering basics of Machine Learning and Deep Learning, Optimization, Regularization, CNNs, Word Vectors, RNNs and Encoder-Decoder Models for an audience of 90 people comprising Undergraduate and Post-Graduate students [\[Slides\]](#)

### A Laplacian Framework for Option Discovery in Reinforcement Learning

October 2018

Presented usefulness of Proto-Value Functions and the paper's laplacian framework for finding useful options [\[Slides\]](#)

### Dataless Classification

April 2018

Presented the idea of using semantic information in label names and how this idea dovetails with co-training [\[Slides\]](#)

### Efficiency of information search in children

October 2018

Presented a cognitive approach to explaining how children and adults search for information equally efficiently [\[Slides\]](#)

## Relevant Courses

- |                               |                                    |                                     |
|-------------------------------|------------------------------------|-------------------------------------|
| o Reinforcement Learning      | o Topics in Reinforcement Learning | o Computational Models of Cognition |
| o Deep Learning               | o Principles of Machine Learning   | o Computational Neuroscience        |
| o Natural Language Processing | o Automata Theory                  | o Philosophy of Mind                |

## Positions of Responsibility

- |                             |  |
|-----------------------------|--|
| Sponsorship, Saarang 2017   | o Managed content pertaining to Saarang 2017; garnered <b>2.25 lakh likes</b> on Facebook, <b>increasing</b> it by 90k |
|                             | o Part of the Sponsorship team that raised 1.6 Cr INR, <b>highest</b> by any student run college festival in India     |
| Data Analytics, Exebit 2018 | o Single-Handedly managed the <b>Data Analytics event</b> of the Computer Science <b>technical festival</b>            |
|                             | o <b>Designed the problem statements</b> for the screening round and Kaggle hosted fraud detection challenge           |
| Mentor, Saathi, 2018        | o <b>Mentoring</b> a group of 8 freshmen to assist them in academic, co-curricular and extra-curricular activities     |

## Extra-curricular activities

- |          |   |
|----------|---|
| Sports   | o Part of Inter-College IIT Madras 'B' team for Football two years in a row; Hostel football <b>captain</b> (17'-18')                                   |
|          | o 3 <b>silvers</b> in Cycling-Race, 2 <b>silvers</b> in Road-Race and a <b>bronze</b> in football - Inter-Hostel Sports                                 |
| Sci-tech | o Part of the Hostel team which finished <b>1<sup>st</sup></b> in Inter Hostel Technical Meet ( <b>TechSoc</b> ) 2017 and <b>3<sup>rd</sup></b> in 2016 |
|          | o Finished <b>Second out of 500 teams</b> in Mimamsa 2017, an <b>All India Science Quiz</b> held by IISER Pune  |