



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
- Explained the **abnormal loss curves** by theoretically **validating** the policy gradient baseline term's problem
- Achieved **better performance** in 60% lesser time on all three tasks in IRGAN using a novel model motivated by [co-training](#)
- 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
- Portrayed **enhanced semantic similarity** by performing domain-transfer of vectors using [RCM](#) model and WordNet [Domain](#)
- [Proposed](#) the HRCM model and H-Ordinal Constraints for **hierarchy aware vectors** to 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 versions of Rank-Based **Prioritized Experience Replay (PER)**
- Reduced running time** of Rank-Based PER (90% lesser) by creating an efficient **open-source implementation**
- Attained **faster convergence** by proposing the use of **linearly attenuated goal sampling** rather than 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

- Enabled **faster scale-in** and **scale-out** by **migrating** 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**
- Improved **parallelization** by creating **consistent** and **exclusive** storage structures which facilitated the **migration** of the core
- Reduced CPU usage by 57%** after hosting the service and achieved close to production performance

Wipro Limited

Bengaluru

Summer Intern

May 2017–July 2017

- Achieved **higher accuracy** by using **hierarchical classification (HC)** instead of flat classification to organize documents
- Proposed the use of **novel evaluation metrics** for HC which helped gain deeper insights into how **different models** performed
- Induced hierarchies** in a semi-supervised setting by performing **term clustering** based on corpus and **WordNet** similarities
- 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**
- Improved** recommendation by performing **topic modeling** and **introducing features** pertaining to trends and source credibility

Selected Course Projects

Inducing Hierarchy in Options Framework by using Imitation Learning

Prof. Balaraman Ravindran

Aug 2018–Present

- Proposed **evaluation metrics** like KL-Divergence, count-based, diffusion time and t-SNE embeddings to **evaluate options**
- Learned options** on various gridworld and **atari** environments using a hill-climbing algorithm and evaluated them
- Proposed the use of **Hierarchical Imitation Learning** to learn options from both **hierarchy aware experts** and flat policies

GPU Assisted Scheduling

Prof. D. Janakiram

Sept 2017–Nov 2017

- Dynamically determined** hardware parameters **crucial** for the OS **Load Balancer** by using **K-Means** and **Genetic algorithms**
- 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

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

Talks and Presentations

Deep Learning Master Class

September 2018

Conducted classes for an audience of 90 people comprising undergraduates and post-graduates, covering basics of Machine Learning and Deep Learning, Optimization, Regularization, CNNs, Word Vectors, RNNs, and Encoder-Decoder Models [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

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

Positions of Responsibility

- | | |
|---------------------------|---|
| Sponsorship, Saarang 2017 | • Managed publicity content pertaining to Saarang; garnered 2.25 lakh likes on Facebook, increasing it by 90k |
| | • Part of the Sponsorship team that raised 1.6 Cr INR, highest by any student run college festival in India |

- | | |
|-----------------------------|--|
| Data Analytics, Exebit 2018 | • Single-Handedly managed the Data Analytics event of the Computer Science technical festival |
| | • Designed the problem statements for the screening round and Kaggle hosted fraud detection challenge |

- | | |
|----------------------|--|
| Mentor, Saathi, 2018 | • Mentoring a group of 8 freshmen to assist them in academic, co-curricular and extra-curricular activities |
|----------------------|--|

Extra-curricular activities

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