Ameet Deshpande

Princeton University   Indian Institute of Technology Madras

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Education

Princeton University   **Princeton, USA**
Ph.D. candidate in Natural Language Processing   *2019–present*
Advisor: Dr. Karthik Narasimhan

Princeton University   **Princeton, USA**
Masters in Computer Science, GPA – 3.94/4   *2019–2021*

Indian Institute of Technology Madras   **Chennai, India**
Bachelor of Technology, GPA – 9.73/10   *2015–2019*
Senior Thesis: Leveraging Sentiment Analysis for Reinforcement Learning

Professional Experience

Allen Institute for Artificial Intelligence (AI2)   **Seattle, WA (Virtual)**
Student Research Intern   *Oct 2022–Apr 2023*

- Authored a first-of-its-kind study on AI safety that shed light on vulnerabilities in persona-assigned ChatGPT-esque systems
- Developed a cognitively inspired system (SPARTAN) for improved inference efficiency of NLP Models (90% faster)

IBM Research   **Yorktown Heights, NY**
Research Intern   *June 2021–Aug 2021*

- Developed and filed a **patent** for an efficient **continual learning system** which uses 99% less memory
- Adapted the system to **enable continued evolution** of models for customers without access to specialized hardware

Scholastic Achievements and Awards

- Won **silver medal** in the **International Chemistry Olympiad** 2015, Azerbaijan (representing India) contested by 80 countries
- Received the **Princeton Graduate School Teaching Award** for significant contribution to undergraduate **teaching**
- **All India Rank - 122** in **JEE (Advanced) 2015**, taken by 1.3 million students (99.99 percentile) and **first** rank in Karnataka
- Awarded the **CMC Prize** for securing **Branch Rank 2** among 61 students (B.Tech+Dual Degree) of CSE at IIT Madras
- Won the **Dr Dilip Veeraraghavan Memorial Award** for scholastic achievements in the humanitites concentration
- Received the government's **MCM scholarship** for being in the **top 5** out of 850 students admitted to IIT Madras in 2015

Publications, Patents, and Preprints

Conferences, Journals, and Workshops

[1] *SemSup-XC: Semantic Supervision for Zero and Few-shot Extreme Classification*
    P. Aggarwal, **A. Deshpande**, and K. Narasimhan
    ICML (2023).

[2] *When is BERT Multilingual? Isolating Crucial Ingredients for Cross-lingual Transfer*
    A. Deshpande, P. Talukdar, and K. Narasimhan
    NAACL (2022).

[3] *Guiding Attention for Self-Supervised Learning with Transformers*
    A. Deshpande and K. Narasimhan
    Findings of EMNLP (2020).

[4] *CLEVR Parser: A Graph Parser Library for Geometric Learning on Language Grounded Image Scenes*
    R. Saqur and **A. Deshpande**
    Proceedings of Second Workshop for NLP Open Source Software (NLP-OSS), EMNLP (2020).

[5] *Leveraging Ontological Knowledge for Neural Language Models*
    A. Deshpande and M. Jegadeesan
    Proceedings of the ACM India Joint International Conference on Data Science and Management of Data (2019).

[6] *Figurenet: A deep learning model for question-answering on scientific plots*
R. Reddy, R. Ramesh, **A. Deshpande**, and M. M. Khapra
2019 International Joint Conference on Neural Networks (IJCNN) (2019).

Patents

[1] *REMIND: Iterative Distillation for Domain Adaptation*
A. Deshpande, M. A. Sultan, A. Ferritto, A. Kalyan, K. Narasimhan, and A. Sil
Patent pending (2023).

[2] *MUX-PLMs: Pre-training Language Models with Data Multiplexing*
V. Murahari, **A. Deshpande**, C. E. Jimenez, I. Shafran, M. Wang, Y. Cao, and K. Narasimhan
Patent pending (2023).

Notable Preprints

[1] *Toxicity in chatgpt: Analyzing persona-assigned language models*
A. Deshpande*, V. Murahari*, T. Rajpurohit, A. Kalyan, and K. Narasimhan
arXiv preprint (2023).

[2] *SPARTAN: Sparse Hierarchical Memory for Parameter-Efficient Transformers*
A. Deshpande, M. A. Sultan, A. Ferritto, A. Kalyan, K. Narasimhan, and A. Sil
arXiv preprint (2022).

[3] *Semantic Supervision: Enabling Generalization over Output Spaces*
A. Deshpande*, A. W. Hanjie*, and K. Narasimhan
arXiv preprint arXiv:2202.13100 (2022).

[4] *Sentiment Analysis for Reinforcement Learning*
A. Deshpande and E. Fleisig
arXiv preprint arXiv:2010.02316 (2020).

Social and Professional Service

Diversity in AI	• **Teachers as Scholars, 2023:** Presented the frontiers of NLP research to high school teachers from the Princeton area to empower them to help their students embark on their NLP journey • **AI/ML Winter School, 2022:** Instructor for a course designed for professors from Indian colleges to incorporate machine learning in their teaching and research • **Princeton AI4ALL, 2020:** Research instructor for Princeton AI4ALL, an initiative intended to increase diversity and inclusion in the field of artificial intelligence. Developed material, taught classes, and mentored a group of six students on a natural language processing project on detecting fake news • **Deep Learning Master Class, 2019:** Conducted classes for an audience of **90** undergraduates and post-graduates from different departments, covering the basics of machine learning and deep learning [Slides]
NLP for Social Good	• Founder member of Princeton NLP4SocialGood, an initiative to **provide natural language processing advice** to individuals, start-ups, and non-profit organizations championing **social impact projects**
Teaching	• COS324: Introduction to Machine Learning (Prof. Sanjeev Arora), Fall 2020 • COS484: Natural Language Processing (Prof. Danqi Chen and Prof. Karthik Narasimhan), Spring 2020
Reviewing/PC	• TMLR (2023), NeurIPS (2022), NAACL (2022), ICML (2022), ARR (2022), Computer Speech & Language (2022), EMNLP (2021), AAAI (2020)

Extra-curricular activities

Sports	• Part of Inter-College IIT Madras Soccer 'B' team for two consecutive years; Dorm soccer **captain** ('17-'18) • Won 3 **silvers** in cycling, 2 **silvers** in Road-Race (7.8 km), and a **bronze** in football (Inter-Hostel Sports)
Sci-tech	• Finished **second out of 500 teams** in Mimamsa 2017, an **All India Science Quiz** held by IISER Pune • Part of the hostel team which finished **1st** in Inter Hostel Technical Meet (**TechSoc**) 2017 and **3rd** in 2016