

Ishaan Watts

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EDUCATION

Carnegie Mellon University (CMU)

Master of Science in Machine Learning; **GPA: 4.0/4**; **Advisor:** Prof. Aditi Raghunathan

Coursework: ML Theory, Probability & Statistics, Optimization Theory, Graphical Models, ML-Systems, Deep RL*

Pittsburgh, PA

December 2026

Indian Institute of Technology Delhi (IIT-D)

Bachelor of Technology in Engineering Physics; **Minor:** Computer Science; **CGPA:** 9/10

Coursework: Algorithms, Calculus, Digital Electronics, Computer Networks, Linear Algebra, Signals & Systems, Economics

New Delhi, India

May 2023

PUBLICATIONS

C=CONFERENCE, P=PREPRINT

- [C.5] **Sharpness-Aware Pretraining Mitigates Catastrophic Forgetting** *Ishaan Watts**, Catherine Li*, Sachin Goyal, Jacob Mitchell Springer, Aditi Raghunathan [Spotlight @ICBINB Workshop ICLR'26][ICML'26] [Paper]
- [P1] **Gemini 2.5: Pushing the Frontier with Advanced Reasoning, Multimodality, Long Context, and Next Generation Agentic Capabilities** Gemini Team, Google DeepMind (including *Ishaan Watts*) [Tech Report] [Paper]
- [C.4] **RTP-LX: Can LLM Evaluate Toxicity in Multilingual Scenario?** Adrian de Wynter, *Ishaan Watts*, et al. [AAAI '25] [Paper]
- [C.3] **PARIKSHA: A Large-Scale Investigation of Human-LLM Evaluator Agreement on Multilingual & Multi-Cultural Data** *Ishaan Watts*, Varun Gumma, Aditya Yadavalli, Vivek Seshadri, Swami Manohar, Sunayana Sitaram [EMNLP '24] [Paper]
- [C.2] **MAPLE: Multilingual Evaluation of Parameter Efficient Finetuning of LLMs** Divyanshu Aggarwal, Ashutosh Sathe, *Ishaan Watts*, and Sunayana Sitaram [ACL Findings '24] [Paper]
- [C.1] **MEGAVERSE: Benchmarking LLMs across languages, modalities, models and tasks** Sanchit Ahuja, Divyanshu Aggarwal, Varun Gumma, *Ishaan Watts*, Kalika Bali, and Sunayana Sitaram [NAACL '24] [Paper]

EXPERIENCE

Carnegie Mellon University | Graduate Student Researcher | Prof. Aditi Raghunathan

August 2025 - Present

Project: **Mitigating Catastrophic Forgetting via Sharpness-Aware Pretraining** [C.5]

- Investigated optimization strategies for **LLM pre-training** beyond loss minimization, identifying loss-sharpness as failure mode.
- Proposed **loss-sharpness aware training** methods, improving quantization and downstream finetuning by **over 35%** at scale.

Google DeepMind | Pre-Doctoral Researcher | Dr. Prateek Jain, Dr. Partha Talukdar

July 2024 - July 2025

Projects: **Gemini 2.5-Pro Contributor** [P1], **Multi-Model Composition**, **Model Stitching vs. Adapters for Continual Learning**

- Explored composition of generalist & specialist LLMs for **continual domain adaptation & compositional tasks** ($code \times i18n$)
- Improved **CALM** architecture & **beat LoRA** under varied budget constraints; presented poster at **Google Research Week '25**
- Designed a **routing-based composition** of 64 models for inference-time expert selection, beating a 2x larger monolithic model
- Engineered robust **JAX-based** training, evaluation, and bulk inference pipelines for composed models within **Gemini codebase**

Microsoft Research | NLP Research Intern | Dr. Sunayana Sitaram

May 2023 - June 2024

Projects: **Toxicity Detection Dataset** [C.4], **Indic LLM Evaluation Leaderboard** [C.3], **Multilingual Finetuning** [C.2] and **Benchmarking of LLMs** [C.1], **Education Bot** [Media Coverage]

- Built culturally-nuanced **evaluation framework** in 10 Indic languages, assessing 30+ LLMs via **120k+** human/LLM judgments
- Released **38-language toxicity benchmark**, evaluating 10 S/LLMs on 8 harm type, exposing failures in detecting subtle biases
- Studied **QLoRA finetuning** on 90+ models, analyzing cross-lingual transfer and benchmarked 20 LLMs across **83 languages**
- Developed & deployed **Shiksha Copilot**, GenAI tool helping teachers create educational content, in **100+ schools** in India

SKILLS

Languages: Python, Java, SQL, R, Bash, C++, Matlab, \LaTeX **Technologies:** Git, Docker, RAG, CUDA, HPC, Vector DB, Spark

Libraries: PyTorch, TensorFlow, JAX, Numpy, Pandas, Matplotlib, Scikit-Learn, Snsrape, Streamlit, Langchain, OpenCV

HONORS & AWARDS

Narotam Sekhsaria (\$40,000), **KC Mahindra** (\$6,000) and **JN Tata Fellowship** (\$20,000) to pursue graduate studies at CMU

Peer Bonuses at Google DeepMind | **1st place** in Microsoft Global Hackathon '24 | **6th place** in Amazon ML Challenge '23

3x IIT-D Semester Merit Awards for being top 3 in department | **KVPY Fellowship** by Government of India, ranking top 2%