

Anirudh Ajith

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🌐 [anirudhajith](https://anirudhajith.github.io) ✉️ anirudhajith.github.io 🎓 Anirudh Ajith

Education

M.S. Computer Science, Princeton University, GPA: 4.00/4.00 2022 - 2024

B.Tech. Computer Science, Indian Institute of Technology, Madras, GPA: 9.52/10.00 2018 - 2022

Relevant Coursework: Natural Language Processing, Large Language Models, Computer Vision, Reinforcement Learning, Deep Learning, Machine Learning, Computational Models of Cognition, Long Term Memory for AI, Multi-variable Calculus, Linear Algebra, Probability Theory, Discrete Math, Graph Theory

Publications & Preprints

[PreScience: A Benchmark for Forecasting Scientific Contributions](#) [blog] **Preprint 2026**

A. Ajith, A. Singh, J. DeYoung, N. Kunievsky, A. C. Kozlowski, O. Tafjord, J. Evans, D. S. Weld, T. Hope, D. Downey

- Introduced PreScience, a benchmark decomposing science forecasting into four generative tasks (collaborator prediction, prior work selection, contribution generation, impact prediction) using a curated dataset of 98k papers with disambiguated authors and a structured graph of citations and past work totaling 502k papers.
- Developed LACERScore, an LLM-based contribution similarity metric that approximates inter-annotator agreement; found frontier LLMs achieve only moderate performance (GPT-5: 5.6/10), and end-to-end simulations produce less diverse and novel output than human research.

[LitSearch: A Retrieval Benchmark for Scientific Literature Search](#) **EMNLP 2024**

A. Ajith, M. Xia, A. Chevalier, T. Goyal, D. Chen, T. Gao

- Curated LitSearch, a retrieval benchmark comprising 597 high-quality realistic and challenging literature search queries answered by top conference publications.
- Conducted extensive evaluations of state-of-the-art retrievers and pipelines demonstrating the high quality of LitSearch and its utility as a testbed for retrieval systems.

[Detecting Pretraining Data from Large Language Models](#) [blog] **ICLR 2024**

W. Shi*, A. Ajith*, M. Xia, Y. Huang, D. Liu, T. Blevins, D. Chen, L. Zettlemoyer **NeurIPS RegML 2023 (Oral)**

- Co-developed *Min-K% Prob* and *WikiMIA* to perform black-box membership inferences on LLM pretraining data, leading to a 7.4% improvement over previous SOTA methods.
- Led case studies using *Min-K% Prob* to detect leakage of 1) ICL benchmark data and 2) copyrighted content into LLM pretraining corpora demonstrating practical applications, generality and effectiveness.

[Downstream Trade-offs of a Family of Text Watermarks](#) **EMNLP Findings 2024**

A. Ajith, S. Singh, D. Pruthi

- Investigated the effects of LLM output watermarking on diverse downstream tasks, identifying key impacts (and causal factors) on performance, enhancing the understanding of watermarking's broader implications.

[InstructEval: Systematic Evaluation of Instruction Selection Methods](#) **NAACL Findings 2024**

A. Ajith*, C. Pan*, M. Xia, A. Deshpande, K. Narasimhan **NeurIPS R0-FoMo 2023 (Spotlight)**

- Led a project designing and implementing a suite to holistically assess instruction selection methods for LLM in-context learning across various models and tasks, utilizing 3 accuracy and 2 sensitivity metrics.
- Introduced *mean relative gain* to enable holistic comparisons, and isolated heuristics for optimizing in-context learning performance, revealing that expensive instruction-selection techniques are often unnecessary.

[Adapting Language Models to Compress Contexts](#) **EMNLP 2023**

A. Chevalier, A. Wettig, A. Ajith, D. Chen

- Contributed to creating *AutoCompressor* models, augmenting off-the-shelf autoregressive LLMs to process extended context lengths via innovative compression of token sequences into soft prompts.
- Designed evaluations for AutoCompressors, demonstrating enhanced performance in language modeling, in-context learning, and retrieval-augmented tasks.

Work Experience

Allen Institute for AI — Predoctoral Young Investigator (*Seattle, WA*) Aug 2024 – (now)

- Built a multitask benchmark for models/systems seeking to automate scientific discovery. Developed and evaluated varied baselines. Developed a novel metric for comparing semantic similarity between a pair of research contributions that approaches inter-annotator agreement. Conducted large-scale simulations to predict the trajectory of future scientific research.

Indian Institute of Science — Research Intern (*Bangalore, India*) Jun 2023 – Aug 2023

- Systematically evaluated (previously unstudied) performance trade-offs of watermarking LLM generations.
- Developed strategy for recovering up to 92% of lost performance without sacrificing watermark signal strength.

AI4Bharat — Researcher (*Chennai, India*) Nov 2021 – May 2022

- Worked on creating *Samanantar 2.0*, the largest ever public collection of parallel corpora for Indian languages.
- Leveraged FAISS, language-agnostic embeddings to mine 50M bitext pairs b/w English and 11 Indic languages.

Microsoft R&D — Data Science Intern (*Hyderabad, India*) May 2021 – Jul 2021

- Created a semantic deduplication pipeline for answers to technical queries for Bing search using deep learning models and clustering techniques leading to significantly increased click-through rates during A/B testing.
- Received a pre-placement offer for full-time employment for demonstrating exceptional skills and competence.

Flutura Decision Sciences & Analytics — Summer Intern (*Bangalore, India*) May 2020 – Jul 2020

- Created end-to-end deep-learning-based pipelines for computer-vision products for multiple clients.
- Fine-tuned CNNs and leveraged pretrained object-detection models to perform 1) defect detection in die-casted components, 2) cell-phone usage detection and 3) defect detection in printed circuit boards with > 96% accuracy

Centre for Innovation, IIT Madras — Project Member (*Chennai, India*) April 2019 – April 2020

- Created an autonomous attendance system pipeline for classrooms that requires only 5 photographs per enrolled student and no additional training to achieve 0.93 F1 @ 1 over a classroom of size 50.
- Leveraged convolutional neural networks MTCNN and FaceNet, KMeans, and other machine learning algorithms.

Academic Achievements

IAS Fellowship Recipient of Indian Academy of Sciences Summer Research Fellowship	2020
Flipkart GRiD 2.0 Hackathon Declared semi-finalist from a pool of 30k participants	2020
KVPY Secured rank 108 out of 50k students in Kishore Vaigyanik Protsahan Yojana (SA)	2016
NTSE Secured National Talent Search scholarship (awarded to top 1000 students among 900k applicants)	2016
Indian National Olympiads National finalist in Computing, Astronomy, Physics and Chemistry olympiads achieving national top 1% positions as a top-ranker in the state.	2015-18
National Mathematics Talent Contest Secured rank 9 among 66k applicants in Ramanujan contest	2017
Regional Mathematics Olympiad Selected for Indian National Mathematics Olympiad Training Camp	2016-17

Other Relevant Responsibilities

Reviewer – EMNLP 2024 (Outstanding Reviewer)	2024
Teaching Assistant – Discrete Math, Datastructures and Algorithms @ Princeton University	2023-2024
Project Member – Computer Vision and Intelligence Group @ IIT Madras	2019

Technical Skills

Languages Python, Bash, C, C++, C#, Java, JavaScript, Julia, OCaml, SQL, TypeScript
Technologies PyTorch, TensorFlow, Keras, Linux, Slurm, Git, Docker, \LaTeX , GNU Octave, GIMP
Development HTML, CSS, JavaScript, nodeJS, ReactJS, Angular, Android