Anush Kini

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Education

PES University   Bengaluru
B.Tech in Computer Science and Engineering   *2017 – 2021*
CGPA : 9.5 / 10.0, Graduated First class with Honors

Papers

* indicates equal contribution

"**Provably Robust DPO: Aligning Language Models with Noisy Feedback**" *ICML 2024*.
Sayak Ray Chowdhury*, **Anush Kini***, Nagarajan Natarajan.

"**OPPerTune: Post-Deployment Configuration Tuning of Services Made Easy**" *NSDI 2024*.
Gagan Somashekar*, Karan Tandon*, **Anush Kini**, ..., Anshul Gandhi, Nagarajan Natarajan.

"**GAR-meets-RAG Paradigm for Zero-Shot Information Retrieval**" *arXiv 2023*.
Daman Arora*, **Anush Kini***, Sayak Ray Chowdhury, Nagarajan Natarajan, Gaurav Sinha, Amit Sharma.

"**Sex-disaggregated Analysis of Risk Factors of COVID-19 Mortality Rates in India**" *OPH Journal 2023*.
Anush Kini, Harish PB, Monica Anand, Uma Ranjan.

Research Experience

Microsoft Research   July 2022 - Present
Research Fellow | Advisors: Dr. Nagarajan Natarajan, Dr. Gaurav Sinha   *Bengaluru, India*
- Developed Black box optimization algorithms to fine-tune configuration parameters [NSDI 2024]
- Came up with an pseudo-relevance feedback pipeline using LLMs to achieve state-of-the-art performance in zero-shot IR
- Proposed LLM alignment methods that are robust to noisy preferences in data [ICML 2024]

Indian Institute of Science   May 2020 – Dec 2020
Research Intern | Advisors: Prof. Uma Ranjan, Prof. Monica Anand   *Bengaluru, India*
- Analyzed indcidence and mortality trends of COVID-19 in India [OPH Journal 2023]

Selected Research Projects

Provably Robust DPO | Paper ⬈
Advisors: Dr. Nagarajan Natarajan
- Proposed unbiased variants of preference-based alignment algorithms that are robust to noise
- Provide theoretical guarantees and empirical results which show that our algorithms mitigate the effect of noise in preference labels

OPPerTune | Code ⬈ , Paper ⬈
Advisors: Dr. Nagarajan Natarajan, Dr. Ranjita Bhagwan
- Developed an optimization framework, using reinforcement learning algorithms to fine-tune configuration parameters of applications in deployment
- These methods improved mean workload times by more than 50%, utilizing only 33% of the number of samples compared to existing methods

GAR-meets-RAG Paradigm for Zero-Shot Information Retrieval | Paper ⬈
Advisors: Dr. Nagarajan Natarajan, Dr. Gaurav Sinha
- Developed a feedback pipeline leveraging LLMs and Lexical Retrievers to improve zero-shot Information Retrieval
- Proposed using Pseudo-Relevance feedback to improve the quality of query rewrites in LLMs while a Relevance LLM filters out non-relevant retrievals

Sex-disaggregated Analysis of Risk Factors of COVID-19 Mortality Rates in India | Paper ⬀
Advisors: Prof. Uma Ranjan, Prof. Monica Anand
- Aggregated and examined incidence and mortality data on COVID-19 in India
- Ran statistical tests and analyzed lasso regression curves to study the gender differentials across various demographic parameters

Dead-Code Elimination
- Developed an algorithm to identify and remove dead code in IR code using the LANCE C compiler

Deep Autoencoders for Compression | Code ⬀
- Applied autoencoders to compress four momentum features of jet particles

Software Development Experience

Google (through Optimum InfoSystems)   Aug 2021 - June 2022
Data Commons Associate   *Bengaluru, India*
- Made public datasets accessible through the Data Commons project
- Developed pipelines and tools in Python to ingest public data into a knowledge graph Merged PRs ⬀

Intel Corporation   Jan 2021 – May 2021
Machine Learning Software Intern   *Bengaluru, India*
- Designed a pipeline to track the performance of workloads on different hardware configurations
- Modeled a MongoDB database to store performance metrics and scores
- Developed a web application using Flask and D3.js that displays relevant visualizations and processed data

The Hi-Tech Robotic Systemz Ltd   June 2019 – August 2019
Machine Learning Intern   *Gurugram, India*
- Developed and benchmarked classifiers to identify day and night images from the live feed of a self-driving vehicle
- Ported the Aggregate Channel Features algorithm(Piotr Dollar et al.) in Python and deployed it as a real-time pedestrian detector

Other Experiences and Roles

Centre for Data Science and Machine Learning, PES University | Research Assistant
- Created an underwater image dataset and trained Generative Adversarial Networks (GANs) to generate underwater images Report ⬀

Parallel Systems Research Lab, PES University | Mentor
- Mentored junior undergraduate students to develop a plagiarism detector with a focus on detecting code obfuscation. Poster ⬀
- Delivered a talk on Vim and Shell Scripting Slides ⬀

Topics In Deep Learning | Teaching Assistant
- Contributed to the development of teaching materials and assignments for an undergraduate course on subjects in Deep Learning

Mlpack | Open Source Contributor
- Mlpack is a C++ machine learning library Merged PRs ⬀

Awards

Microsoft Global Hackathon 2022: Won third place in two categories - Hack 2 enable and Hack for Society
Google AI Summer School 2020: Among the 150 students selected throughout India for a summer school on AI organized by Google. Participated in lectures and discussions with eminent AI researchers Website Link ⬀
Intel Student Project: Secured 1st place in a project by Intel on image segmentation Certification ⬀ |Blog Link ⬀
Prof. CNR Rao Merit Scholarship: Awarded merit scholarships for my academic performance during my undergraduate studies Certification ⬀

Skills

Languages – *Advanced*: Python, C++; *Intermediate*: Bash, SQL, Javascript, HTML; *Familiar*: R
ML Frameworks – Pytorch, Tensorflow
Development – *Advanced*: MongoDB, Flask, D3.js; *Familiar*: AngularJS