Anush Kini

Email: anushkini@gmail.com
Website: abilityguy.github.io

Education

PES University — Bengaluru
B.Tech in Computer Science Engineering; CGPA : 9.5 / 10.0 — *2017 – 2021*

Publications

[1] Daman Arora*, Anush Kini*, Sayak Ray Chowdhury, Nagarajan Natarajan, Gaurav Sinha, and Amit Sharma. **GAR-meets-RAG Paradigm for Zero-Shot Information Retrieval**. *Under review*, 2023 Paper

[2] Gagan Somashekar, Karan Tandon, Anush Kini, Chieh-Chun Chang, Petr Husak, Ranjita Bhagwan, Mayukh Das, Anshul Gandhi, and Nagarajan Natarajan. **OPPerTune: Post-Deployment Configuration Tuning of Services Made Easy**. In *Networked Systems Design and Implementation (NSDI)*, 2024 Paper

[3] Anush Kini, Harish PB, Monica Anand, and Uma Ranjan. **Sex-disaggregated Analysis of Risk Factors of COVID-19 Mortality Rates in India**. *The Open Public Health Journal*, 2023 Paper

Research Experience

Microsoft Research — July 2022 - Present
Research Fellow | Advised by: Dr. Nagarajan Natarajan, Dr. Gaurav Sinha — *Bengaluru, India*

- Worked on open-sourcing SelfTune, a reinforcement learning algorithm that uses approximate gradient descent to optimize black-boxes
- Developed *Hybrid Bandits*, a black-box optimization algorithm that jointly tunes hybrid spaces i.e., numerical and categorical parameters
- Devised a novel strategy employing oblique decision trees to designs scoping policies for the tuning of configuration parameters
- Currently working on developing a Bayesian optimization algorithm to optimize time-varying black-boxes in hybrid spaces
- Devised a self-optimizing pipeline using Large Language Models to enhance zero-shot information retrieval
- **Keywords:** *Optimization, Reinforcement Learning, Bayesian Optimization, Information Retrieval*

Indian Institute of Science — May 2020 – May 2021
Research Intern | Advised by: Dr. Uma Ranjan — *Bengaluru, India*

- Aggregated incidence and mortality data from different public sources on COVID-19 in India
- Developed visualizations and ran statistical tests to analyse the gender differentials across different demographic parameters.
- Analyzed lasso regression curves to determine correlates with mortality across three cohorts levels
- **Keywords:** *Statistical Modeling, Hypothesis Testing*

Industry Experience

Google — Aug 2021 - June 2022
Data Commons Associate — *Bengaluru, India*

- Made public datasets more accessible through the Data Commons project
- Developed pipelines and tools in Python to ingest US and Indian Public data into the Data Commons knowledge graph Merged PRs

Intel — Jan 2021 – May 2021
Machine Learning Software Intern — *Bengaluru, India*

- Designed a pipeline to track the performance of workloads on different hardware configurations
- Modelled and developed a MongoDB database to store performance metrics and scores
- Designed a web application using Flask and D3.js that interacts with the database and displays relevant visualisations and processed data

The Hi-Tech Robotic Systemz Ltd June 2019 – August 2019
Machine Learning Intern *Gurugram, India*

- One of 10 interns chosen for a collaborative internship with Carnegie Mellon University's (CMU) Robotics Institute
- Participated in webinars headed by experts from CMU, in the field of machine learning and robotics
- 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

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

CAPS-PSRL Lab | *Member and Mentor*
- Developed a plagiarism detector with a focus on identifying code obfuscation Poster
- Delivered a talk on Vim and Shell Scripting Slides

CDSAML | *Research Assistant*
- Developed underwater images using Generative Adversarial Networks Report

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

Selected Projects

- **INK Talks Search Engine:** Wrote a web scraper to collect data on talks from the INKTalks.com website. Used GloVe vector embeddings to create a cosine-similarity based search engine Code
- **Deep Autoencoders for Compression:** Experimented with autoencoders to compress the 4 momentum features of jet particles from ATLAS data to 3 features Code
- **Low Birth Weight Detection:** Experimented with different machine learning models to identify low birth weight Report
- **Multi-Dimensional Knapsack using Genetic Algorithms:** Used Genetic Algorithms to generate approximate solutions to different instances of the multi-dimensional knapsack problem Report

Awards

- **Google AI Summer School 2020:** Among the 150 applicants selected throughout India. 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. Blog Link
- **Prof. CNR Rao Scholarship:** Awarded merit scholarships for outstanding academic performance during my undergraduate studies

Skills

Languages: C, C++, Python, Shell, R
Frameworks: Pytorch, Tensorflow
Technologies: Git, LaTeX, Amazon AWS, Heroku, MongoDB, Flask, D3.js

Relevant Courses

Undergraduate: Machine Learning, Natural Language Processing, Digital Image Processing, Data Analytics, Cloud Computing, Compiler Design, Web Technologies, Computer Networks, Operating Systems, Database Systems, Computer Architecture, Data Structures, Advanced Algorithms, Linear Algebra
Online: Machine Learning by Andrew Ng, DeepLearning.AI TensorFlow Developer - 4 course specialization. , Deep Learning - 5 course specialization.