Yash Bhisikar *Computer Science Undergraduate*

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EDUCATION

B.E.(Hons) Computer Science, Minor in Data Science Oct 2021 – present | Sancoale, Goa
BITS Pilani

- CGPA: 9.18
- Recipient of **Merit Scholarship** by the university for excellent academic performance
- Coursework: Machine Learning*, Foundations of Data Science*, Data Structures and Algorithms, Probability and Statistics, Linear Algebra, Differential Equations, Multivariate Calculus, Network Programming (* *ongoing*)

RESEARCH EXPERIENCE

Anuradha and Prashanth Palakurthi Centre for Artificial Intelligence Research (APPCAIR) Jul 2023 – present | Sancoale, Goa
Undergraduate Researcher

- Working on **causal pruning** under the supervision of **Prof. Snehanshu Saha** and **Prof. Aditya Challa ,** in collaboration with Wadhwani AI
- Designing a **non-chaotic** pruning strategy that preserves feature importances for neural networks
- Investigating **Granger Causality** and comparing against L0, L1 and Rank-based methods

Data, Systems and High-Performance Computing Lab Mar 2023 – present | Sancoale, Goa
Undergraduate Researcher

- Working under **Prof. Arnab K. Paul** on **parallel file systems** and **high performance computing**
- **Deployed** and **maintained** a 32-node cluster consisting of rack servers, desktop workstations and Raspberry Pi's
- Designing an algorithm for **optimal file-volume mapping** in BeeGFS, incorporating adaptive striping, access pattern analysis, and file-size awareness

North Eastern Space Applications Centre May 2023 – Aug 2023 | Umiam, Meghalaya
Research Intern

- Developing predictive models for **rainfall forecasting**, improving upon the prediction horizon of existing weather models
- Created a data pipeline for pre-processing geospatial datasets and integrated it with a **UNet-based architecture**
- Conducted experiments combining **genetic algorithms** and **gradient-descent based optimizers** to improve accuracy

PUBLICATIONS

Does Varying BeeGFS Configuration Affect the I/O Performance of HPC Workloads?
Re-envisioning Extreme-Scale I/O for Emerging Hybrid HPC Workloads (REX-IO), IEEE Cluster 2023
Arnav Borkar† , Joel Tony† , Hari Vamsi K. N, Tushar Barman, **Yash Bhisikar**, Sreenath T. M., Arnab K. Paul

PROJECTS

Project Kratos Jun 2022 – present
Core Member, Autonomous Subsystem

- Competing in international **Mars Rover** prototype competitions as a part of a multidisciplinary student team
- Worked on a **real-time object detector** using Darknet and experimented with **YOLO** models on our custom dataset
- Designed a **PID-inspired** mechanism to autonomously navigate directions using arrow signs captured in a monocular camera feed
- Integrated a GPS-based **navigation mechanism** with the tech stack to traverse between local GPS coordinates

Reinforcement Learning Via Sequence Modelling Jun 2023
Python, PyTorch, OpenAI Gym, Matplotlib, Jupyter

- Implemented the **Decision Transformer** paper by replacing the transformer with an **LSTM** to compare accuracies in a non-Markovian setting
- Used a sequence of Reward, State, and Action tokens to condition the model and predict the next reward and optimal action
- Compared results with model-free offline RL Baselines on **Mujoco's Hopper environment**

Zero Shot Segmentation on Arbitary Image-Text Prompts using Clip Jun 2023

Python, PyTorch, OpenCV

- Used **OpenAI's Clip** to generate embeddings of image/text prompts and performed **Featurewise Linear Modulation** on it
- Inspired from the UNet, trained a **lightweight transformer-based decoder** on top of the embeddings to generate the **binary segmentation mask**

Data Prefetching for Edge Deep Learning Workloads Aug 2023 – present

Apache Kafka, Pytorch, Python, Distributed Deep Learning

- Designing a comprehensive framework to **optimize convergence time** for deep learning training workloads on edge devices
- Implementing a **prefetching** mechanism to **reduce I/O overhead** and reduce overall training time
- Using **Apache Kafka** to stream data from a **distributed file system** to compute nodes

SKILLS

Languages (Python, C++, Java, MySQL, Rust, Haskell) | **Tools and Frameworks** (Linux, Git and Github, ROS, Gazebo, NeoVim)

Libraries (PyTorch, Tensorflow, NumPy, Matplotlib, Pandas, OpenCV, Rasterio, PyGad)

TEACHING EXPERIENCE

Department of Computer Science and Information Systems Aug 2023 – Dec 2023

Teaching Assistant

- Teaching assistant for Discrete Structures for Computer Science course (CS F222)
- Designed question papers, conducted tutorials, graded assignments, and helped solved doubts for 250+ students

Quark Summer Technical Projects May 2023 – Aug 2023

Mentor

- Led and developed a summer course on ROS, Robot Automation and Computer Vision for university freshers
- Conducted instructional sessions, hands-on tutorials and evaluated weekly assignments

AWARDS

State Topper

Indian Olympiad Qualifer in Chemistry

- IOQC is a qualifier exam for the Indian National Chemistry Olympiad conducted by the Homi Bhabha Centre for Science Education (HBCSE-TIFR)

KVPY Fellowship

Government of India

- KVPY is a National Program of Fellowship in Basic Sciences, initiated and funded by the Department of Science and Technology, Government of India

CLUBS AND COMMITTEES

Society for Artificial Intelligence and Deep Learning (SAiDl) Aug 2023 – present

Member

- A group of undergraduate researchers based out of BITS Pilani and interested in research and application of Artificial Intelligence and Deep Learning
- Collaborate with industry and research labs on cutting-edge research
- We try to inculcate a spirit of AI and DL in the university through workshops, open-source projects and courses

TEST SCORES

JEE Mains
Top 0.07 percentile among 1.1 million candidates

JEE Advanced
All India Rank 1938 among 100,000 candidates

MHT-CET
99.995 percentile among 400,000 candidates

Class 12 Examinations
Score: 99%