OM KHARE

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Education

College Of Engineering Pune Technological University   2020 – Present
B.Tech in Computer Engineering, Honors in Data Science   **CGPA - 9.24/10**

Professional Experience

Deutsche Bank — Certificate   May, 2023 – July, 2023
Technology Summer Analyst   Pune, India

- Designed and implemented a clustering algorithm to categorize comparable privilege session requests, identifying 20% of them with similar characteristics. This led to the automation of these grouped sessions, resulting in a monthly savings of approximately 100 man-hours for the organization.
- Performed sentiment analysis on employee comments on knowledge articles to determine content effectiveness. An increase of 15% in positive feedback was observed, and the results were presented in the form of an analytical dashboard.

Research Experience

Samsung Prism (R&D Bangalore) — Certificate   April, 2023 – August, 2023
Research Intern   Virtual

- Developed an On-Device Graph Database from scratch by providing a SPARQL parser to handle READ, INSERT, DELETE, and FILTER query operations on RDF data
- Outperformed expected performance metrics of 1 ms query plan execution and 20k minimum operations per second while maintaining storage size of approximately twice the raw data size
- ACID properties were ensured by implementing reader-writer locks and multi-threading.

Mechanical Department, Cummins College of Engineering, Pune   July, 2023 – September, 2023
Research Assistant   Pune, India

- Worked under the guidance of **Prof Abhishek Patange** to explore the application of machine learning with an emphasis on the white-box model in mechanical domain. 1 paper submitted to a journal.

Publications

Leveraging a Randomized Key Matrix to Enhance the Security of Symmetric Substitution Ciphers
Paper presented at the 10th IEEE CSDE 2023, the Asia-Pacific Conference on Computer Science and Data Engineering

- Proposed an innovative strategy to enhance the security of substitution ciphers by utilizing a randomized key matrix suitable for various file formats.
- The effectiveness of the proposed methodology is evaluated by comprehensive testing and analysis, which encompass computational speed, frequency analysis, keyspace examination, Kasiski test, and the utilization of a large language model

Making informed decisions in cutting tool maintenance in milling: A KNN-based model agnostic approach | Paper under review at the Applied Soft Computing Journal by Elsevier

- Performed statistical analysis and applied machine learning concepts (KNN algorithm) to predict tool condition using classification with an aim to mitigate type-2 error.
- Concepts such as hyper-parameter tuning, model agnostic, and a white-box model approach were used to provide informed decision-making to the user.

YOLOv8-Based Visual Detection of Road Hazards: Potholes, Sewer Covers, and Manholes
Paper presented at the IEEE PuneCon 2023 conference

- Worked on solving the problem of visual detection of road hazards like potholes in real time for autonomous vehicles to make quick decisions.
- Leveraged YOLOv8, a convolutional neural network model to detect potholes with low processing time and small size of the deployed model while ensuring high accuracy of 92% across diverse environment conditions.

Projects

Laboratory Inventory Management System (LIMS) | Project Completion Certificate

- Designed, developed, and deployed a full-stack application for a Chemical Testing Laboratory
- Built a React frontend for chemists of the laboratory to help them keep track of tests to be performed on raw materials. It included features like digital signature, role-based logins, calculating test results, and making dynamic reports for 150+ tests with time-to-time database backups.
- Position: Project Lead | *React, Node.js, SQL*

CoVigilance (Crowd management system) | Github link and demo

- Collaborated to build a real-time, contact-less crowd management system by leveraging machine learning
- Created a web portal that provides real-time analysis for the authorities and a mobile application for the public to see the real-time statistics with push notifications to alert about crowd density
- *React, Node.js, Firebase, React Native, Python, TensorFlow*

Demand Paging in xv6 | Github link
- Implemented Demand Paging support in xv6 operating system, as a course project for Operating Systems
- Grade: Highest in the department | *C, xv6*

Position of Responsibility

Project Manager
Software Development Society, COEP

- Core member of the student-led software development club in the college with 30 members. Responsible for overseeing client interactions and effectively coordinating project timelines and deliverables, ensuring successful project execution.
- Projects done under SDS: Election Portal for the college, PhD admission website for the college, Social Security Scheme website for employees of Indian Medical Association, Pune

Web and App Head
MindSpark 2022, Annual National Level Technical Fest of COEP

- Led a team of 20 coordinators to build and deploy the app and website for Mindspark'22, COEP's Annual National Level Technical Fest, which got 30k+ unique visitors. The app is available on play-store, website is live here.
- Contributed to the successful organization of a national-level offline hackathon overseeing technical and logistics aspects.

Prizes and Honors

Finalist at the Smart India Hackathon 2022 organized by the Government of India

Winner, MindSpark Hackathon 5.0 (COEP)
Position: Team Leader — Certificate

Extra Curricular Activities

- Volunteer at Paakhi, a Women Empowerment Initiative for underprivileged girls from rural areas of Pune. — Certificate
- Conducted an app-development workshop and 'Getting familiar with Git' lecture for juniors at COEP.

Skills

Machine Learning	Tensorflow, PyTorch, NLP, YOLO, OpenCV, Numpy, Pandas
Web Development	MERN Stack, Django, React Native, PHP, SQL, Android
Programming Languages	C/C++, Python, Javascript
Relevant Course Subject	Operating Systems, Database Management System, Computer Networks, Data Science, Artificial Intelligence, Design and Analysis of Algorithms, Data Structures