ASHISH KULKARNI

+91 636-436-5511 Email
LinkedIn Website GitHub

EDUCATION

PES University 2020 – 2024

Bachelor of Technology in Computer Science and Engineering (CGPA: 8.03 / 10) *Bengaluru, Karnataka, India*

- **Relevant Coursework:** Data Structures and Algorithms (C++, Java, Python), Object Oriented Programming (Java), DBMS (MySQL, PostgreSQL), Graph Theory (Graph Neural Networks, Neo4j), AR/VR (Blender, GLUT, Unity), Deep Learning (PyTorch, TensorFlow)
- **Awards:** 3x Distinction Award Recipient

EXPERIENCE

Nasdaq Aug 2024 – Present

Software Developer *Bengaluru, Karnataka, India*

- Played a key R&D role in a small team jump-starting a new machine intelligence product, an Investor Relations Advisory product under Capital Access Platforms, involving **named entity recognition (NLP)**, **web scraping**, **AWS**, and RDBMS (**SQL Server** and **PostgreSQL**).
- Made several improvements to **fuzzy matching** and added **GenAI LLM summarization**, and took the project to production.
- Designed a **PostgreSQL schema** for backend processes, and re-architected the web scraping solution.
- Worked on **Terraform for AWS** resource provisioning: step functions, batch jobs, lambdas, malware protection using GuardDuty, managing secrets, etc.
- **Mentored at a 6-month ML bootcamp** for 30+ employees at Nasdaq Bengaluru.

Nasdaq Jun 2023 – Jul 2024

Software Development Intern *Bengaluru, Karnataka, India*

- Jump-started a new ML-based Advisory product as the primary **Python** developer: presented a minimum viable product, presented it to the product team, got it greenlit, and took the project to prototype phase.
- **Global finalist** of the 2023 intra-company hackathon by leveraging **LLMs** for **Terraform** script generation.

StanceBeam Jun 2022 – Aug 2022

Computer Vision Intern *Bengaluru, Karnataka, India*

- Implemented the usage of **stereo vision** and **epipolar geometry** to compute the 3D coordinates of a subject, to be used in a future decision review system for cricket.
- **Geometric Techniques**: Epipolar Geometry, Trigonometry
- **Technologies**: OpenCV, NumPy, Python3

PROJECTS

OpenGL Projects | *C++, GLUT*

This repository contains projects I built while studying the Fundamentals of Augmented and Virtual Reality at PESU, under Dr. Adithya Balasubramanyam. My work ranges from basic 2-d projects, such as generating the **Sierpinski triangle fractal** using the chaos method, visualizing **Graham's scan algorithm**, all the way up to implementing elastic **sphere collisions** in 3-d space.

Glaucoma Diagnosis from Retinal Fundus Images | *Python, TensorFlow, scikit-learn*

Evaluating popular **CNN** architectures and **histogram equalization**-based preprocessing techniques on classifying a retinal fundus image into normal or glaucomatous. Find our results and preprint at the link above.

covibot | *Python, PRAW*

A Reddit bot (Top 5 at a hackathon) which gives COVID-19 stats of a specific region without an explicit call, using low-level NLP, and accessing government datasets. I turned my learnings from this project into a 3-part guide on Analytics Vidhya, which you can generally find ranked on the first page of Google search results for *how to make a Reddit bot*.

Graph-based Recommender | *Python, NetworkX, DGL (Deep Graph Library), PyTorch*

A recommender system using link prediction algorithms and GCN (graph convolutional networks).

Blender Models | *Blender*

This repository contains Blender models I built while studying the Fundamentals of Augmented and Virtual Reality at PESU, under Dr. Adithya Balasubramanyam.

Image Editor | *Python, NumPy, OpenCV, Pillow Image Library*

This project contains a command-line interface and a UI-based image manipulation application, including features like **Gaussian blur**, **gamma correction**, etc. I developed this as a deliverable for my Linear Algebra course taught by Dr. Jyothi R.

TECHNICAL SKILLS

Languages: Python, C++, Java, C
Concepts: Operating System, Artificial Intelligence, Machine Learning, Neural Networks, Database, Agile Methodology, Cloud Computing, Generative AI, Large Language Models, Computer Vision, Data Science, Computer Networks
Certifications: Principles of Secure Coding, *Udemy*; AWS Educate Introduction to Cloud 101, *Amazon Web Services*; Quantum Computing Using Qiskit, *PESU I/O*; LFD103, *The Linux Foundation*

AWARDS

DAQ: Expand Your Expertise | *Nasdaq*

For significant contributions to the InDi project, expertise in AI/ML, and investing time in learning Terraform.

DAQ: Play as a Team | *Nasdaq*

For mentoring in the 7-month AI/ML Cohort Batch 1 Bootcamp at Nasdaq Bangalore.

DAQ: Play as a Team | *Nasdaq*

Part of the self-managed Advisory ML team handling a new data collection project.

DAQ: Drive Innovation | *Nasdaq*

Regional winner and global finalist of the SEEN global intra-company hackathon, 2023.

RESEARCH PAPERS

Diffusion Inference with Dynamic Classifier-free Guidance | *IEEE*

At the time, most diffusion-based text-to-image generation techniques involved multiple steps of inference, and made use of a constant factor known as classifier-free guidance (CFG) scale throughout the inference process to tune how closely the generation followed the prompt. In this research, my co-authors and I, under the guidance of Dr. Jayashree Rangareddy, created and experimented with dynamic CFG: scheduling the CFG scale over inference steps. We documented our findings in a conference paper.

A Comparative Study on Deep Convolutional Neural Networks and Histogram Equalization Techniques for Glaucoma Detection From Fundus Images | *medRxiv (preprint)*

This research aims to evaluate the enployment of various convolutional neural network (CNN) architectures and histogram equalization techniques for glaucoma detection in fundus images. The study utilized the publicly available ACRIMA database, comprised of 705 fundus images (396 glaucomatous and 309 normal).

TEACHING

PES University Jan 2024 – Apr 2024
Teaching Assistant *Bengaluru, Karnataka, India*

Teaching assistant for the 6th-semester course Object-Oriented Analysis and Design with Java (UE21CS352B), under Prof. Priya Badrinath, for 180+ students. Find tasks and other resources on my GitHub repository.

ARTICLES

A Comprehensive Guide to Creating a Basic Reddit Bot *Analytics Vidhya*
Linear Regression Made Simple *Analytics Vidhya*
GameStop: What it means to short a stock *The Citadel*