ABHISHEK SINGH

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Education

- **National Institute of Technology Delhi** — **Delhi, India**
  M.Tech Computer Science Engineering (Analytics) (**CGPA:** 8.68/10.00) — *August 2022 – November 2024*
- **Netaji Subhas University of Technology East Campus (Formerly AIACTR)** — **Delhi, India**
  B.Tech Computer Science & Engineering (**CGPA:** 6.88/10.00) — *August 2016 – September 2020*

Experience

GL Bajaj Institute of Technology & Management | *Assistant Professor* — *January 2025 – Currently*

- Assistant Professor in Computer Science - AI department, specializing in teaching AI concepts, machine learning, and data analysis.

STMicroelectronics | *Automation Engineering Intern* — *July 2023 – May 2024*

- *Automates Process Design Kit (PDK) Files:* Developed Python scripts using regex and pandas to automate the creation of entire PDK files, achieving nearly 100% accuracy and reducing design process time by half.
- *Automation Hub GUI Development:* Designed and implemented GUI using Tkinter and customtkinter, integrating multiple scripts for streamlined execution from a unified interface. Enhanced operational efficiency by centralized script management.
- *Error Detection Automation:* Utilized Siemens Solido CrossCheck to identify and analyze IP validation errors, improving error reporting and distinguishing identified waivable errors through machine learning.
- *Script and Tool Development:* Updated and created scripts in Python, Perl, and shell languages, delivering efficient automation solutions based on team needs.

National Institute of Technology Delhi | *Teaching Assistant* — *August 2022 – June 2023*

- Assisted professors in delivering course material for undergraduate computer science classes, enhancing student understanding and engagement.
- Conducted weekly lab sessions, providing hands-on support and troubleshooting for programming assignments and projects.
- Graded assignments and exams, ensuring fair and consistent evaluation of student performance.

Projects

Python AI Agent | *Python, Pandas, llama, OpenAI*
April 2025 – June 2025

- Developed an AI agent leveraging llama-index and OpenAI's gpt-4o-mini for advanced information retrieval across diverse data sources, including CSV, PDF, and text files.
- Integrated real-time data scraping (Scrapeless for Google Maps) and modular tools, enhancing agent responsiveness and knowledge.

Local AI Agent | *Python, Pandas, OllamaLLM, ChromaDB*
Dec 2024 – Jan 2025

- Developed a RAG-based AI agent using Ollama and Chroma DB for pizza restaurant Q&A from customer reviews.
- Implemented a vector database to store and retrieve realistic restaurant reviews, demonstrating expertise in leveraging large language models (LLMs) for information retrieval and conversational AI.

Automation Hub GUI | *Python, Pandas, Customtkinter* — **STMicroelectronics**
July 2023 – May 2024

- GUI for managing and running multiple automation scripts from one place with features like dynamic script loading, tool configuration, and environmental setup.
- Enabled comprehensive script management through a well-structured CSV input system, ensuring flexibility and scalability.

Sketch2Image Translation using GANs | *Python, OpenCV, Tensorflow, Keras* — **NIT Delhi**
June 2023 – July 2024

- Utilized OpenCV to develop a method for converting images to sketches, creating a paired dataset for training a conditional GAN, pix2pix.
- Employed U-Net, PatchGAN for the generator, discriminator resp. to translate images from one domain to another.

Breast Cancer Prediction Using Histopathological Images | *Python, Pandas, Tensorflow, Keras* — **NIT Delhi**
January 2023 – May 2023

- Extract healthy and unhealthy images from every patient, contributing to 2.8 lac 50×50 patches, and utilize transfer learning with a pretrained CNN model, ResNet, as the dataset was small.
- Used appropriate evaluation metric instead of accuracy due to data imbalance.

Hindi OCR using Traditional Techniques | *Python, Numpy, Pandas, Scikit-learn* — **NIT Delhi**
August 2022 – December 2022

Skills

Programming Languages: Python, C/C++, Perl, Csh, SQL, Java, HTML/CSS
Frameworks & Libraries: Scikit-learn, Tensorflow, Keras, PyTorch, NLTK, Flask, GeoPandas, Google Earth Engine, Selenium, Flask, Django, OpenCV, Pandas, SciPy, Matplotlib, Seaborn
Skills, Softwares & Tools: SQL & NoSQL databases (MySQL, PostgreSQL, MongoDB, Cassandra), Siemens Solido CrossCheck, Git, PowerBI, ETL, Machine Learning, Deep Learning

Achievements

GATE CS Qualifier - 2022, 2025 — *February 2022, February 2025*
GATE DS Qualifier - 2025 — *February 2025*
UGC-NET CSA Qualifier - 2024 — *October 2024*
IEEE Publication : Exploring Contextual Appropriateness of Spectral Indices for Remote Sensing-Based Land Coverage Classification Using Machine Learning