Bhushan Kumar

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EDUCATION

VIT Bhopal University
B.Tech in Computer Science •Specialization Artificial Intelligence & Machine Learning • Bhopal, Madhya Pradesh • May 2026 • **CGPA:** 8.37/10

PROJECTS

Bhopal Water Quality Monitoring (February 2023 – April 2023) Omdena VIT BHOPAL local chapter

- Developed satellite-based water quality monitoring system using GIS, eliminating IoT sensor costs while maintaining accuracy.
- Analyzed water quality across 14 lakes using satellite imagery to extract pH, turbidity, chlorophyll, and oxygen metrics.
- Built real-time dashboard for water quality monitoring, enabling rapid detection of quality deterioration.
- Implemented cost-effective monitoring solution for government agencies, replacing traditional IoT sensor systems

Heart Disease Prediction using Boruta Feature Selection Algorithm (December 2023 — February 2024)

- Engineered a machine learning model utilizing the Random Forest Classifier in Python, achieving an accuracy of 98.6%.
- Prepared a comparative analysis of various classifiers, identifying the Random Forest Classifier as the most optimal.
- Applied the Boruta Feature Selection Algorithm to rigorously extract 118 significant features from the dataset. Subsequently, leveraged these features to train a Random Forest Classifier, enhancing the model's accuracy and performance.

Facial Recognition Attendance System (July 2023 — August 2023)

- Spearheaded a state-of-the-art Facial Recognition system using Python, OpenCV, NumPy, csv, and os modules, achieving 95% accuracy in identifying faces and reducing authentication time by 50%.
- Developed and implemented an Excel sheet designed to efficiently store and manage detailed records of employee names and their reporting times. This system ensures accurate tracking and easy retrieval of employee attendance data, enhancing overall organizational efficiency and record-keeping accuracy.
- Successfully executed the implementation of the system in our classroom, efficiently managing and handling data for over 140 students. This involved accurately capturing, storing, and organizing student information, ensuring seamless operation and data integrity.

Artificial Intelligence Road Detection System (April 2023 — June 2023) Omdena VIT BHOPAL local chapter & Mexico chapter

- Contributed to the project by collecting 1,200 raw images and accurately annotating over 600 images.
- Development of AI-based road inspection system using computer vision and deep learning to automate detection of road defects across Mexican cities, supporting UN Sustainable Development Goals 9 & 11
- Engineered machine learning pipeline utilizing transfer learning and pre-trained CNN architectures (GoogLeNet) to classify multiple categories of road defects from pictures.
- Implemented transfer learning techniques to overcome data scarcity challenges, optimizing model performance for detecting cracks, patching, rutting, and surface deformations in various road conditions

ACADEMIC ACHEIVEMENTS

Member

SEDS Nebula • October 2023 – September 2024

- **SEDS** is an international student organization whose purpose is to promote space exploration and development through educational and engineering projects.

Student Coordinator

RTASCE 2023 • July 2023

- Coordinated and led an International Conference on Recent Trends in Applied Sciences and Computer Engineering.
- Organized a 3-day event featuring diverse participants and prominent national and international experts.

CERTIFICATIONS

- Applied Machine Learning Using Python Michigan University - Coursera
- Privacy and Security In Online Social Media – NPTEL

SKILLS

Programming: Python, HTML/CSS, SQL, C++
Tools: VS Code, Blender, Unreal