

Ashutosh Kumar

Electrical Engineering Graduate (2020-2024), Central University of Haryana, Mahendragadh, India
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RESEARCH INTERESTS

Machine Learning, IoT, Automation Systems, Data Communication Networks, Electrical Power Distribution, Data Analytics, Renewable System , Electrical Vehicle and Deep Learning

Professional Profile

A perceptive individual with Bachelor in Electrical Engineering. Completed a Bachelor project and Internship at Tata Steel and IIT Roorkee . A Machine Learning enthusiast and developer with a keen interest in advancing research in AI and ML. I'm passionate about exploring the latest technologies and methodologies in Machine Learning, constantly seeking to expand my knowledge and skills in this field. My goal is to contribute to innovative projects and solutions that leverage AI and ML to solve complex problems and drive technological advancements.

EDUCATION

Central University of Haryana, Mahendragarh, India

August 2020 - July 2024

Bachelors of Technology in Electrical Engineering

Cumulative GPA: 8.36/10

Shivam International School (82/100)

Senior Secondary

Research Experience

Research Internship at Machine Vision Lab, IIT Roorkee (CSE Dept), Roorkee, India

Intern

February 2024 — March 2024

- Completed a 2-month internship under Prof. Partha Pratim Roy, working on a Python project to build a chatbot using a large language model.

Research Internship at AI Lab, IIT Roorkee (Electrical Engineering Dept), Roorkee, India

Intern

April 2024 — Present

- Implemented a real-time object detection system using FPGA and Jetson Nano under Prof Dr. P Sumathi Mam, Professor , Electrical Engineering, IIT ROORKEE
- Intel Hackathon Project: Won the third prize in the AI healthcare project category at the Intel Hackathon, awarded by Cognizance, IIT Roorkee.

Summer Internship at National Institute of Electronics and Information Technology, Bihta, India

Intern

July 2022 — August 2022

- Acquired in-depth knowledge of Arduino Programming, IoT Sensors, IoT Interfacing, IoT Connectivity, IoT Hardware Platforms, Micro-controllers, and Introduction to IoT.

INDUSTRY EXPERIENCE

Intern, Bihar State Power Transmission Company Limited (BSPTCL)

Patna, India

Summer Internship

May 2022 - July 2022

- Studied grid sub-station operations, transmission paths, and safety precautions.
- Authored a 50-page report on workstation procedures, presented to committee members.
- Gained practical insights into electrical power distribution.

Intern, Tata Steel, Jamshedpur

Jamshedpur, India

Study of Basic Level Automation and Data Communication Network of HSM

June 2023 - August 2023

- Investigated data exchange, cybersecurity, IIoT integration, and continuous improvement.
- Gained expertise in automation systems, communication protocols, and project management.

SKILLS

Technical Skills

Programming Languages

- Python, Linux, Latex, MATLAB

Machine Learning and Deep Learning

- Skilled in deep learning frameworks: TensorFlow, PyTorch
- Experience with convolutional neural networks (CNNs), object detection models (YOLO, SSD, Faster RCNN)

Internet of Things (IoT)

- Proficient in Arduino programming
- Familiarity with IoT sensors, interfacing, connectivity, and hardware platforms

Software Tools

- MATLAB Simulink, OpenCV, Git, NLTK, Machine learning Tool

Other Skills

- Statistical analysis using Python and MATLAB
- Familiarity with Linux environment

Organizational and Managerial Skills

- Effective project management and team leadership
- Strong communication and presentation skills
- Ability to work collaboratively in a multidisciplinary team

AWARDS AND ACHIEVEMENTS

Coding Club, Central University Of Haryana
Stood 10/300 March 2023

Debate Competition, St. Mary's School
3rd Position 2019

Marathon Winner March 2024
Intel GenAI Hackathon Winner
3rd Rank in India at IIT Roorkee

Conferences and Workshops

Conferences

Participant, Electric Vehicle Conclave, IIT BHU
December 2023

- Attended "Driving the Future: Confluence of Data Analytics And Electric Vehicles."

Workshops

Certificate of Participation, Workshop on AI Startup by Google
Cognizance, IIT Roorkee
March 2024

- Engaged in sessions focused on AI startup strategies.

PROJECTS

Battery Management System Using Arduino Nov 2023

- Monitored the status of health (SoH) and status of charge (SoC) in a battery management system using Arduino and sensors (current, voltage, and temperature).
- Powered the circuit with 5 volts, running the load via the battery and displaying measurements on an LCD (16x2).

- Used two parallel-connected motors as the load, measuring and computing SoC regardless of current direction.
- Proposed an SoH estimator activated when the battery begins charging, providing an attractive solution for lead-acid battery applications.

Global Positioning System (GPS), Real-Time Monitoring

- Developed a GPS tracking system to accurately determine and monitor real-time geographical coordinates of an object or person.
- Aimed to provide precise location information for security, efficiency, and safety purposes.

Flight Fare Prediction

Kaggle Dataset

- Developed a machine learning model to predict flight fares using the Kaggle dataset.
- Preprocessed the dataset to handle missing values and performed feature engineering.
- Implemented various machine learning algorithms such as Random Forest, XGBoost, and Gradient Boosting to train the model.
- Evaluated the model using metrics like RMSE (Root Mean Squared Error) to assess its performance.

Real-Time Moving Object Detection Using FPGA and Jetson Nano

Nov 2023

- Implemented a real-time object detection system using FPGA and Jetson Nano at IIT Roorkee.
- Designed and optimized deep learning algorithms to achieve high accuracy and efficiency in detecting moving objects for advanced surveillance applications.
- Utilized YOLO and ViT architectures for robust and real-time tracking, enhancing the capabilities of automated systems.
- Conducted performance evaluation and real-time testing to ensure the system's reliability and effectiveness in dynamic environments.

Publications

Link to dataset: [View Dataset](#)

Abstract: DIRS24.v1 presents a dataset captured in a campus environment, suitable for developing perception modules for Advanced Driver Assistance Systems (ADAS) and a Journal Paper is submitted in presence of the Prof Dr. P Sumathi mam, IIT ROORKEE

COURSES

Other's Courses

- Complete Python Developer in 2023 - Zero to Mastery, Udemy
- Data Structure and Algorithms, Udemy
- Machine Learning A-Z: Python and R in Data Science, Udemy
- MATLAB, Central University of Haryana

Bachelor's Courses

- Electrical Engineering Core Courses
- Advanced Mathematics
- Circuit Analysis
- Control Systems
- Signal Processing
- Power Systems
- Microcontrollers
- Automation and Control

REFERENCES

Prof. Rajesh Kumar Dubey

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