Ashutosh Kumar

Electrical Engineering Graduate (2020-2024), Central University of Haryana, Mahendragadh, India
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PROFESSIONAL PROFILE

A perceptive individual with a Bachelor's degree in Electrical Engineering. I completed my Bachelor's project and internships at Tata Steel and IIT Roorkee in the AI and Machine Vision Lab. I am a Machine Learning enthusiast and developer with a strong interest in advancing research in AI and ML. I have experience working with YOLO, LSTM, Transformer, GRU, and Faster R-CNN, interested in deep learning.

EDUCATION

Central University of Haryana, Mahendragarh, India — August 2020 - July 2024

- Bachelor of Technology in Electrical Engineering — Cumulative GPA: 8.36/10 , Top 1 Percentile

Shivam International School — (82/100)

- Senior Secondary, Top 3 Scorer

RESEARCH EXPERIENCE

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

Research intern — February 2024 - March 2024

- Completed a 2-month Research internship under Prof. Partha Pratim Roy, worked on a Python project to build a chatbot. Certificate

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

Research Intern — April 2024 — July 2024

- Implemented a real-time object Tracking system using FPGA and Jetson Nano under Prof. Dr. P. Sumathi, Professor, Electrical Engineering, IIT Roorkee. Report Certificate
- Intel Hackathon Project: Won the third prize in the AI healthcare project category at the Intel Hackathon, awarded by Cognizance, IIT Roorkee awarded by 25k Cash Prize. **Certificate:** Hackthon Winner

Research Intern at AI Lab, IIT Patna (CSE Dept), Patna, India

Research Intern — Dec 2024 — April 20

- *Developed Federated Sensing, an edge-cloud collaborative learning framework for intelligent sensing, combining elastic local updates and adaptive synchronization to enhance model accuracy by 18.8 and reduce cloud idle time by 74.5, validated on real-world environmental datasets.*

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. Certificate
- Gained practical insights into electrical power distribution. PPT

Intern, Tata Steel, Jamshedpur, India

Study of Basic Level Automation and Data Communication Network of HSM — June 2023 - August 2023

- Gained expertise in automation systems, communication protocols, and project management. Certificate PPT
- Authored a 60-page report on workstation procedures, presented to committee members.

PROJECT

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 MSE , R2 to assess its performance.

Real-Time Moving Object Detection Using FPGA and Jetson Nano

July 2024

- 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. Report Certificate

Battery Management System Using Arduino

November 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. Project

Global Positioning System (GPS), Real-Time Monitoring Using Arduino

- 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. Project Report

PUBLICATIONS

Link to dataset: View Dataset **Bachelor Thesis:** Report.Pdf **PPT Presented:** Presenation

- **Abstract:** DIRS24.v1 presents a dataset captured in a campus environment, suitable for developing perception modules for Advanced Driver Assistance Systems (ADAS). A journal paper has already been submitted.

SKILLS

Technical Skills

Programming Languages

- Python,Javascript , HTML, CSS, LaTeX, MATLAB

Machine Learning and Deep Learning

- Skilled in deep learning frameworks: TensorFlow, PyTorch
- Experience with convolutional neural networks (CNNs),RNN, object detection models (YOLO, SSD, Faster RCNN), LSTM ,Transformer , GRU , BiLSTM , OpenCV, NLTK, Machine Learning Tools etc, IOT Sensor .
- 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

COURSES

Other's Courses

- The Complete Python Developer by Andrei Neagoie
- NLP - Natural Language Processing with Python
- Python Course From Basic to Advanced
- Machine Learning A-Z: AI, Python & R + ChatGPT Prize
- TOEFL iBT (26+) Complete Preparation Course!
- Data Structure and Algorithms, 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

AWARDS AND ACHIEVEMENTS

- **Coding Club**, Central University of Haryana — March 2023
  - Stood 14/300 Link
- **Debate Competition**, St. Mary's School — 2019
  - 3rd Position
- **Marathon Winner** — March 2024
- **Intel GenAI Hackathon Winner** — 3rd Rank in India at IIT Roorkee
- **NSS Quiz 1st Rank** Link

CONFERENCES AND WORKSHOPS

Conferences

Participant, Electric Vehicle Conclave, IIT BHU — December 2023
- Attended "Driving the Future: Confluence of Data Analytics and Electric Vehicles. Link

Workshops

Certificate of Participation, Workshop on AI Startup by Google — IIT Roorkee — March 2024
- Engaged in sessions focused on AI startup strategies. Link
- Participation at Cognizance 2024 GEN AI Hackthon Link

References

Prof. Rajesh Kumar Dubey
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