Pavan Sharma

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CURRENT POSITION

I am a Ph.D. student at Mehta Family School of Data Science and Artificial Intelligence, IIT Roorkee, India, supervised by Prof. **Dr. Alok Bhardwaj**. My major research interests include application of Artificial Intelligence in Earth Observation, with emphasis on developing scalable cloud-based frameworks for automated disaster management using satellite image analysis, big data analytics, and machine learning techniques.

EDUCATION

Ph.D., Data Science and Artificial Intelligence (Pursuing), CGPA: 7.14/10 *2023 – Present*
Indian Institute of Technology, Roorkee, Uttarakhand, India
Thesis Title: Earth Observation Big Data Analytics Framework for Enhanced Disaster Management.
Supervisor: Dr. Alok Bhardwaj

M.E., Control Systems, CGPA: 8.04/10 *2019 - 2021*
Jabalpur Engineering College, Jabalpur, Madhya Pradesh, India
Thesis Title: Time Frequency Analysis and Transfer Learning Based Study of Rolling Bearing Fault Classification.
Supervisor: Dr. Hemant Amhia

B.E., Electrical Engineering, Percentage: 8.02/10 *2014 - 2018*
Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV), Bhopal, Madhya Pradesh, India

WORK EXPERIENCE

Senior Engineer, Tata Elxsi – Transportation Bussiness Unit *Mar 2022 – June 2022*
Worked on automotive control systems with a focus on Model-Based Design (MBD) using MATLAB/Simulink.

CERTIFICATIONS & TRAINING

Post Graduate Diploma in Big Data Analytics (PG-DBDA) *Mar 2022 - Sep 2022*
Centre for Development of Advanced Computing (CDAC), Bangalore

- **Key Modules:** Programming in Python, R, and Java; Linux and Cloud Computing; Advanced Statistics and DBMS; Big Data tools (Hadoop, Spark); Machine Learning and Deep Learning with real-time analytics; Data Visualization and Reporting.

Remote Sensing and Digital Image Analysis (Online) *Aug 27 – Sep 20, 2024*
Indian Institute of Remote Sensing (IIRS-ISRO), 24-hour duration.
Covered fundamentals of satellite-based Earth observation, image interpretation, and digital processing techniques.

AI/ML Workshop on AI-Enabled Face Mask Detector (Online) *Edureka*
Attended a hands-on virtual workshop focusing on AI applications in public health monitoring using computer vision techniques.

RESEARCH INTERESTS

- Deep Learning and Machine Learning for Earth Observation and Disaster Risk Assessment
- Semantic Segmentation, Object Detection, and Classification in Multisensor Remote Sensing Data
- Computer Vision for Automated Change Detection and Hazard Mapping
- Signal and Image Processing Techniques for Feature Extraction from EO Imagery
- Large Language Models (LLMs) for Disaster Data Discovery and Knowledge Retrieval
- Scalable AI Pipelines and Cloud-Based Architectures for Real-Time Geospatial Analytics

PUBLICATIONS

- Sharma, P., Amhia, H., Sharma, S.D. (2022). *Transfer Learning-Based Model for Rolling Bearing Fault Classification Using CWT-Based Scalograms.* AISC, Springer. DOI
- Sharma, P., Amhia, H., Sharma, S.D. (2021). *Performance Analysis of Pre-trained TL Models for Rolling Bearing Faults.* J. Phys. Conf. Ser. DOI

PROJECTS

PG-DBDA Project: Failure Detection and Remaining Useful Life Prediction for Aircraft Engines
Tools: Python, Machine Learning, Deep Learning
Developed predictive models to estimate component failure and remaining operational life based on sensor data using supervised learning techniques.

Data Engineering Project: Real-Time Data Analysis Using Kafka
Tools: Python, Apache Kafka, AWS EC2, S3, Glue, Athena
Designed a real-time data pipeline for streaming, storing, and analyzing data using Kafka and AWS cloud services.

Post-Graduation Project: Transfer Learning Based Model for Rolling Bearing Fault Classification using CWT-Based Scalograms
Tools: Deep Learning in MATLAB
Implemented a transfer learning approach on time-frequency scalograms for accurate classification of mechanical faults in rotating machinery.

AWARDS & SCHOLARSHIPS

- Received Tuition Fee Waiver (TFW) Scholarship during B.E. for academic merit (2014-2018).
- MHRD Scholarship for M.E. (2019–2021) and Ph.D. (2023–2027)
- Qualified GATE (EE): 2019

TECHNICAL SKILLS

- Programming: Python, Core Java, JavaScript
- Web Development: HTML, CSS, React, Node.js, Express, MongoDB (MERN Stack)
- Cloud and DevOps: AWS (EC2, S3, Lambda, Step Functions, API Gateway, Glue, Athena, CloudWatch)
- Big Data Technologies: Hadoop, Hive, Spark, Kafka
- Databases: SQL, MongoDB
- Machine Learning, Deep Learning
- GIS Tools: QGIS, Remote Sensing Image Processing
- Visualization: Power BI, Microsoft Excel, Matplotlib, Seaborn
- Operating Systems: Linux, Windows

TEACHING ASSISTANCE

- **Fundamentals of AI/ML (DAC-151)**, IIT Roorkee — Teaching Assistant *Jan 2024 – May 2024 (Spring)*
- **Data Science (DAI-101)**, IIT Roorkee — Teaching Assistant *July 2024 – Dec 2024 (Autumn)*
- **Data Science (DAI-101)**, IIT Roorkee — Teaching Assistant *Jan 2025 – May 2025 (Spring)*
- **AI-Based Earth Imaging Lab (DAI-103)**, IIT Roorkee — Teaching Assistant *Jan 2025 – May 2025 (Spring)*

DECLARATION

I hereby declare that the above information is true to the best of my knowledge.

Pavan Sharma

Place: Roorkee