

# Harshdeep Joshi

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## Education

Graphic Era Hill University, Uttarakhand

Expected June 2025

Bachelor of Technology in Computer Science

**Relevant Coursework:** Data Structures, Algorithms, Artificial Intelligence, Object-Oriented Programming, Database Systems, Computer Networks, Operating Systems

## Experience

Research Intern - IIT Roorkee

Dec 2024 - Present

*Exploratory Data Analysis (EDA) for Environmental Sensing*

- Developing Python pipelines for analyzing terabyte-scale sensor datasets using Pandas, Dask, and PySpark
- Implementing automated anomaly detection achieving 98% accuracy in faulty sensor identification
- Creating interactive dashboards with Plotly and Tableau for real-time data visualization
- Optimizing SQL queries reducing processing time by 40% on PostgreSQL clusters

## Technical Skills

- **Languages:** Python (NumPy, Pandas, TensorFlow, Flask), C++ (STL, OOPs), JavaScript (React), SQL (MySQL, SQLite)
- **Machine Learning:** Computer Vision (YOLO, OpenCV), Transformers, Regression/Classification, Edge Deployment
- **Web Development:** Flask, REST APIs, HTML5/CSS3, Tailwind CSS, JWT Authentication
- **DevOps/Cloud:** Docker, AWS (EC2, S3), CI/CD (GitHub Actions), Linux Shell Scripting
- **Hardware:** ESP32, Sensor Integration (MPU6050), 3D Printing (Fusion 360)

## Projects

Leopard Deterrence System

YOLO | SARIMA | Edge AI

- Developed YOLO-based real-time detection system reducing human-leopard conflicts by 40% across 3 test villages
- Implemented SARIMA time-series forecasting with 2.3hr MAE for wildlife movement prediction
- Optimized inference latency to 150ms using multi-threading on edge devices (Raspberry Pi 5)
- Integrated with existing CCTV infrastructure via RTSP protocol, processing 15 FPS streams

Exam Archive

Flask | AWS | 200+ MAU

- Built full-stack exam repository hosting 300+ papers with Elasticsearch-powered search
- Automated S3 backups saving 20+ admin hours/month with versioned bucket policies
- Designed REST API with JWT authentication handling 50+ concurrent requests
- Implemented responsive UI with Tailwind CSS achieving 95+ Lighthouse accessibility score

Auto Login Chrome Extension

JavaScript | Chrome APIs

- Reduced campus network login time by 90% for 500+ daily users through credential automation
- Implemented secure credential storage using Chrome's storage.sync API with encryption
- Added auto-reconnect feature handling 3G/4G network fluctuations with 99.8
- Deployed via Chrome Web Store with 4.8/5 average rating from 120+ users

Sign Language Translation Gloves

CNN-LSTM | ESP32

- Achieved 92% real-time translation accuracy for 50 ASL gestures using CNN-LSTM model
- Reduced inference latency to 50ms via TensorFlow Lite quantization on ESP32
- Processed sensor data from MPU6050 accelerometer/gyroscope at 100Hz sampling rate

## Achievements

- **NASA Space Apps 2024:** Silver Medal (Top 1%) - Built D3.js visualization tool deployed on AWS EC2
- **Global Nominee:** Among top 500 projects worldwide (50,000+ participants)
- **ITUWSTA Recognition:** Featured for innovative wildlife conservation solution