

Hrshikesh Singh

+91-837-598-5272 hrshikesh.hsk@gmail.com hrishi.in

Research Experience

Research Fellow

IRDE Lab - DRDO

Principal Investigator: Prof (Dr) Millie Pant & Dr. Himanshu Singh

June 2025 - Present

- Engineering end-to-end frameworks for *Small Target Detection, Tracking & Trajectory Determination* under extreme low SNR conditions using advanced signal processing and deep learning. Simulating mission scenarios via high-fidelity *Synthetic Infrared Video Datasets* across *aerial, maritime, and orbital* domains for algorithm benchmarking and hardware-in-the-loop testing.

Research Fellow

IIT Roorkee

Guide: Prof (Dr) Millie Pant

March 2024 - June 2025

- Working on *Machine learning in Computer vision & Image processing*, time-series data and explainability of black box models using *Explainable AI (XAI)* methods in collaboration with Dr. Millie Pant (HoD-AMSC).

Machine Learning Research Intern

IIT Delhi

Research Advisor: Dr K. K. Biswas | Python

May '17 - Jan '18

- Implemented image enhancement and segmentation algorithms for structured document and natural scene image datasets.
- Extracted handcrafted features and applied classical vision techniques for layout analysis and region detection.

Work Experience

Senior ML Engineer

SISL

SISL | Deep Learning, Computer Vision

Jan 2022 - March 2024

- Led design of modular ML systems for vision-based monitoring using deep learning, synthetic data, and cloud-native deployment.
- Developed end-to-end pipelines for detection, tracking, and spatiotemporal pattern analysis in real-world video streams.

Technical Consultant

Coding Ninjas

Technical Consultant | Python, Java

May 2023 - Sept 2023

- Designed *Introduction to Java, Data Structure and Algorithms* and *Design Patterns Course* for career camp program undertaken by 3000+ engineers and final year students.

ML Engineer

SISL

SISL | Deep Learning, Computer Vision

Aug 2020 - Dec 2021

- Built scalable vision pipelines using deep feature extractors and representation learning techniques for structured visual data.
- Applied spatial-temporal modeling to analyze high-noise image sequences across industrial and surveillance contexts.

Software Engineering Intern

Google Summer of Code

DBpedia | Java

May 2018 - Aug 2018

- Mentor : Dr Mangus Knuth, DBpedia Association
- Worked on an enhanced *Table of Content Extractor* for *WikiMedia Datadump* generated by conversion of conventional Semantic data (XML/JSON) format to *Resource Description Format (RDF)* following *OWL standards*.
- Created DBpedia Ontology based *Languange resources (NLP Interchange format)* via URIs, IRIs extraction from unstructured Wikispaces. Improved the extracted resources for *Linked Data Access* and *SPARQL Queries*

Education

Jaypee Institute of Information Technology

Bachelor of Technology in Computer Science (Dean's List, SGPA 10/10)

New Delhi

Publications & Reviewer

- Reviewer: Engineering Applications of Artificial Intelligence (*Journal*) & SocProS 2025
- Financial Context-Rich Strategy for Actor-Critic Based Agents: A DDRL Approach for Stock Trading
- Pixels to Prose: Understanding the art of Image Captioning
- Empirical Analysis of Bitcoin Market Volatility Using Supervised Learning Approach
- Autonomous Drone Swarm Navigation in a 2D Grid Environment Using Reinforcement Learning
- Breaking the Domino Chain: Using Causal AI to Anticipate and Reduce Manufacturing Downtime

Awards

- Best Paper Award - BAMS-ORSI 2024
- Gold Medal in National Mathematics Olympiad - AISMTA
- Gold Medal in Delineation Competition (District Level)

Technical Skills

Languages: Python, Java, C++, SQL

Machine Learning: Computer Vision, NLP, Feature Engineering, PyTorch, Keras, Pandas, NumPy, OpenCV.

Frameworks & Technologies: FastAPI, Django, NoSQL, Docker, AWS, Spring Boot, Jenkins, PyTest, JUnit, Linux,