# Shruti Nigam

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Final-year BTech student in Computer Science and Engineering (AI & ML) with a strong focus on machine learning and deep learning for data-driven problem-solving. Experienced in participating in interdisciplinary research, including an internship at ISRO's UR Rao Satellite Centre, where I worked with spacecraft telemetry data. Vision to contribute to impactful research in machine learning and its applications in sustainability.

## EDUCATION

**Dayananda Sagar University — *Bangalore, Karnataka*** Oct 2021 - May 2025

- Bachelor of Technology in Computer Science and Engineering (AI & ML)
- GPA: 7.85 (First Class with Distinction)
- Relevant Coursework: Deep Learning and Computer Vision, Natural Language Models, Advanced Data Science, Machine Learning, Cloud Computing, Artificial Intelligence, Introduction to Space Technologies, Explainable Artificial Intelligence, Advanced Deep Learning, Operations Management

## EXPERIENCE

**Intern, *URSC (UR Rao Satellite Centre), ISRO (Indian Space Research Organization)*** Jul 2024 - Aug 2024

- Title: “Analysis of Archived Spacecraft Telemetry Data”
- Interned in the Mission Data Processing Lab associated with the Spacecraft Mission Checkout and Software Group
- Developed an interactive GUI using Qt Creator and C++ to analyze and visualize spacecraft telemetry data, optimizing usability for researchers
- Extracted day-to-day spacecraft telemetry datasets
- Skills: C++, Qt, Linux, GUI Development, Spacecraft Telemetry, Data Analysis

## ACADEMIC PROJECTS

**Multi-Agent Systems for Environmental Monitoring *[Artificial Intelligence and Multi-Agent Systems]***

- Tools: Python, Satellite Data Analysis, Multi-Agent Systems, Satellite Data Integration
- Description: Developed a Multi-Agent System (MAS) for environmental monitoring to enhance decentralized data processing. Designed agents as classes to autonomously analyze satellite data for anomaly detection and pattern recognition. Improved scalability and efficiency by distributing tasks across agents, creating a modular and flexible system capable of managing large-scale environmental datasets.

**Adaptive Machine Learning Framework for Environmental Monitoring *[Machine Learning and Environmental Analysis]***

- Tools: Python, Machine Learning, Online Learning, Incremental Learning
- Description: Designed an adaptive machine learning framework to analyze environmental trends using real-time satellite data. Integrated online and incremental learning techniques to enable continuous improvement and adaptability without full retraining. Enabled real-time adaptability and timely insights for environmental decision-making.

**Earth Observation Using Machine Learning *[Machine Learning and Data Science]***

- Tools: Python, Scikit-learn, Matplotlib, Satellite Data Analysis
- Description: Conducted research to evaluate and compare machine learning models (random forest, linear regression and decision trees) for weather prediction using satellite data. Enhanced prediction accuracy and model reliability by leveraging metrics such as MAE, MSE, Variance score, and R2-score. Improved weather forecasting insights for specific regions with precise model tuning.

**Programming Assistance Chatbot with Neural Networks and NLP *[Natural Language Processing and Artificial Intelligence]***

- Tools: Python, PyTorch, NLTK, Natural Language Processing
- Description: Developed an AI chatbot for answering C programming-related queries, employing neural networks trained using PyTorch. Fine-tuned activation functions and error-handling mechanisms to optimize learning efficiency. Delivered a functional and interactive tool for educational purposes.

**Transfer Learning for Brain Tumor Detection *[Computer Vision and Medical Imaging]***

- Tools: Python, TensorFlow, Keras, OpenCV, Deep Learning
- Description: Implemented transfer learning using models like ResNet50V2 and VGG19 for brain tumor detection in MRI scans. Enhanced model precision through hyperparameter tuning and data augmentation. Converted models to ONNX format for improved deployment, ensuring faster and more reliable diagnostic performance.

## SKILLS

- **Technical Skills**
  - ➔ Programming Languages: Python, C, C++
  - ➔ Libraries: Scikit-learn, TensorFlow, Keras, PyTorch, OpenCV, NLTK, Matplotlib
  - ➔ Version Control: Git

- **Soft Skills**
  - ➔ Leadership
  - ➔ Research
  - ➔ Extempore
  - ➔ Public Speaking

## CERTIFICATIONS

- The Complete Machine Learning Course, Udemy
- JavaServer Pages Complete Certification Training, Udemy
- CSS (Basic) Skill Certification, HackerRank
- Overview of Space Science, IIRS-ISRO Outreach Program
- AI/ML for Geodata Analysis, IIRS-ISRO Outreach Program

## RECOGNITION

- Selected Attendee, Quantum Research Park (QuRP) @ IISc: Quantum Technology Workshop (2024)
- Tutor, Probability and Statistics, Dayananda Sagar University (2024)
- Selected Participant, Mathematics Conference (Wavelets, Number Theory, Engineering Math), Dayananda Sagar University (2021)