

# 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

<b>Dayananda Sagar University — Bangalore, Karnataka</b>	Oct 2021 - May 2025
<ul style="list-style-type: none"><li>Bachelor of Technology in Computer Science and Engineering (AI &amp; ML)</li><li>CGPA (ongoing): 7.97/10 (First Class with Distinction)</li><li>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</li></ul>	

## EXPERIENCE

<b>Intern, URSC (UR Rao Satellite Centre), ISRO (Indian Space Research Organization)</b>	Jul 2024 - Aug 2024
<ul style="list-style-type: none"><li>Title: "Analysis of Archived Spacecraft Telemetry Data"</li><li>Interned in the Mission Data Processing Lab associated with the Spacecraft Mission Checkout and Software Group</li><li>Developed an interactive GUI using Qt Creator and C++ to analyze and visualize spacecraft telemetry data, optimizing usability for researchers</li><li>Extracted day-to-day spacecraft telemetry datasets</li><li>Skills: C++, Qt, Linux, GUI Development, Spacecraft Telemetry, Data Analysis</li></ul>	
<b>AI/ML Engineer Intern, Indus Vision</b>	Mar 2025 - May 2025
<ul style="list-style-type: none"><li>Title: "Intelligent CSV Query Agent Using Groq LLM and LangChain"</li><li>Designed and implemented a lightweight, end-to-end natural language interface to query CSV data using LangChain's create_csv_agent with Groq-hosted LLMs (Mistral models)</li><li>Developed an interactive Streamlit-based web application that allows users to upload any CSV file and pose complex, multi-step questions, dynamically answered by the LLM after analyzing column relations.</li><li>Gained hands-on experience integrating LLMs with user-facing tools, managing .env secrets, deploying agents, and leveraging LangChain, LLMs, RAG components, Streamlit, and Groq APIs for intelligent tabular interaction.</li><li>Skills: Python, Large Language Models (LLMs), LangChain, Retrieval-Augmented Generation (RAG), Groq</li></ul>	

## ACADEMIC PROJECTS

<b>Urban Growth Forecasting and LULC Dynamics in Bangalore using Random Forest Classification and Cellular Automata on Dynamic World Satellite Data [Machine Learning, Geospatial AI, Remote Sensing]</b>
<ul style="list-style-type: none"><li>This research proposes a scalable urban forecasting framework combining Random Forest classification and Cellular Automata simulation on 10m-resolution Dynamic World satellite data. Using probabilistic land cover inputs, our model accurately classifies 2025 LULC and forecasts 2026 built-up expansion in Bangalore. It highlights ecologically sensitive transitions and aids informed urban planning.</li><li>Tools and Libraries: Python, Google Earth Engine, Google Colaboratory, <i>Geemap</i></li></ul>
<b>Lightweight Speaker-Aware Separation Using ECAPA Embeddings and DCF-Inspired Masking [Speech Processing using Deep Learning]</b>
<ul style="list-style-type: none"><li>This research presents a lightweight speaker-aware target speech extraction system using ECAPA-TDNN embeddings and DCF-inspired masking. It enables real-time separation from 8 kHz mixtures using only a 1-second enrollment. The approach integrates proven components into a practical, interpretable pipeline, achieving strong performance on MiniLibriMix without relying on complex architectures.</li><li>Tools: Python, Google Colaboratory, <i>SpeechBrain</i>, <i>TorchAudio</i>, <i>Asteroid</i></li></ul>

## SKILLS

<ul style="list-style-type: none"><li><b>Technical Skills</b><ul style="list-style-type: none"><li>→ Programming Languages: Python, C, C++</li><li>→ Frameworks: LangChain, Streamlit, Qt, TensorFlow, Keras, Scikit-learn</li><li>→ Developer Tools: Git, Visual Studio Code, Google Colabs, Linux, API Integration</li></ul></li><li><b>Soft Skills</b><ul style="list-style-type: none"><li>→ Leadership</li><li>→ Research</li><li>→ Extempore</li><li>→ Public Speaking</li></ul></li></ul>
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## CERTIFICATIONS

<ul style="list-style-type: none"><li>The Complete Machine Learning Course</li><li>JavaServer Pages Complete Certification Training</li><li>CSS (Basic) Skill Certification</li><li>Overview of Space Science, IIRS-ISRO Outreach Program</li><li>AI/ML for Geodata Analysis, IIRS-ISRO Outreach Program</li></ul>
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## RECOGNITION

<ul style="list-style-type: none"><li>Project Expo Winner, Computer Vision and Machine learning Category, Tech Spark 2.0, Dayananda Sagar University (2025)</li><li>Selected Attendee, Quantum Research Park (QuRP) @ Indian Institute of Science (IISc): Quantum Technology Workshop (2024)</li><li>One-on-one Tutor, Probability and Statistics, Dayananda Sagar University (2024)</li><li>Selected Participant, Mathematics Conference (Wavelets, Number Theory, Engineering Math), Dayananda Sagar University (2021)</li></ul>
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