

Saurav Kumar Roy

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EDUCATION

Amrita Vishwa Vidyapeetham, Amritapuri Campus

2023 - 2027 (Expected)

B.Tech in Electrical and Computer Engineering

(Current CGPA: 8.27/10.0)

OPEN SOURCE CONTRIBUTIONS

Contributor, [Sunpy](#)

June 2024 - Present

- Resolved critical bugs, enhanced documentation, and implemented new features while maintaining 80%+ test coverage to improve software stability and usability. ([Link to Merged PRs](#))
- Engineered a method to save ‘sunpy.map.Map’ objects to ASDF (Advanced Scientific Data Format), improving data interoperability for the solar physics community.

PROJECTS

Legal Ease [\[Live App\]](#)

- Engineered a web application using Streamlit and AI to summarize and analyze complex legal documents from PDF and image uploads.
- Implemented an interactive chat interface allowing users to ask follow-up questions for clarifying legal terminology and clauses.

JWST Light Curve and Spectral Analysis [\[GitHub\]](#)

- Processed and plotted light curves and spectra of exoplanet WASP-39b from James Webb Space Telescope (JWST) NIRSpec data.
- Utilized Astropy and Matplotlib to confirm the atmospheric presence of CO₂, H₂O, and other compounds through atmospheric retrieval techniques.

Diffusion-Based Poem Generator [\[GitHub\]](#)

- Developed a text-to-text diffusion model to generate poetry by fine-tuning NVIDIA’s Sana model architecture.
- Trained the model on a specialized Kaggle poetry dataset to capture stylistic and thematic nuances.

Get The Text (OCR) [\[GitHub\]](#)

- Built and trained an Optical Character Recognition (OCR) model using a PyTorch implementation of an LSTM-CTC architecture.
- Generated a custom synthetic dataset for robust training using the ‘trdg’ (Text Recognition Data Generator) library.

MolGAN: Molecular Graph Generation [\[GitHub\]](#)

- Implemented the MolGAN paper, a generative adversarial network, to generate novel small molecular graphs using PyTorch.
- Integrated a reinforcement learning objective to guide the generation of chemically valid compounds with desired properties.

VOLUNTEER EXPERIENCE & LEADERSHIP

- Workshop Facilitator**
- Haripad, Kerala, India
- Designed and delivered a hands-on workshop for 7th-grade students at a government school on electronics and career development.
 - Mentored students on the fundamentals of Arduino and Tinkercad, and provided guidance on early-stage career planning.

- Clean-Up Drive Participant**
- Vallikavu, Kerala, India
- Participated in a community-wide clean-up initiative to promote environmental awareness and local sustainability.

TECHNICAL PROFICIENCIES

Languages	Python, C, JavaScript, SQL
Frameworks & Libraries	PyTorch, NumPy, Pandas, Matplotlib, Scikit-learn, Astropy, Sunpy, Streamlit, React, MPLAB X, Arduino, STM32Cube
Developer Tools	Git, GitHub, Linux, VS Code,