Mansimar Singh Kohli

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EDUCATION

B.TECH(Engineering Physics)	2022-2026	Delhi Technological University, New Delhi	7.23(till 3rd semester)
CBSE (Class XII)	2022	Bosco Public School	93 %
CBSE (Class X)	2020	Bosco Public School	92 %

EXPERIENCE

Data Science Intern **SPARKS FOUNDATION** **July'24-Present**

- Developed and implemented advanced **Machine Learning** models including RNN, LSTM, transformers, and GPT-2.
- Contributed to in-depth **exploratory data analysis tasks** to uncover insights and inform business decisions.

Physics Research Intern **UNIVERSITY OF NORTH CAROLINA** **June'24-Present**

- Collaborated with Joseph Moscoso on a literature review of fundamental physics in **nuclear physics and neutron stars**.
- Focused on **static star equations and TOV equations** to enhance understanding of neutron stars.
- Formulated a Python model with a team of 10 students to **simulate nuclear equations of state** with relativistic effects.

Research Student **REYES - UC BERKLEY** **June'24-Present**

- Enhanced **STEM** knowledge through lectures, panels, and activities on **Computational Physics**. Contributing and collaborating on **Scientific data analysis**.

Neuroscience Research Intern **IIT - DELHI** **May'24-Present**

- Engaged with Dr. Pooja Sahni and a group of 4 on **EEG data analysis**, utilizing **MATLAB, EEGLAB, and ERPLAB** for tasks such as **filtering, artifact removal, and referencing**.
- Executed advanced data analysis using **FFT, ERP** techniques, and **ML on brain data of 20 patients**

ACADEMIC PROJECTS

Disease Detection & Recommendation System | Nltk, Flask, HTML | **GitHub Link** | **Jun'24**

- Developed an NLP-based disease **diagnostics & drug recommendation system for 20+ diseases**.
- Achieved **93.2% accuracy** using **TF-IDF Vectorization** & **Passive Aggressive Classifier**, optimizing it over 20% more accuracy.
- Engineered a **Flask and HTML** interface with **Beautiful Soup** and **WordNet** for enhanced data processing and semantic analysis.

Asteroid Spectra Classification Model| Colab, TensorFlow-Keras & Scikit-Learn | **GitHub Link** | **Jan'24**

- Devised ML model for **classifying and visualizing 1450+ asteroid spectra**, advancing precision in celestial analysis.
- Implemented **multiclass Hyperparameter tuning** using **SVM**-GridsearchCv with a **peak accuracy of 97%**
- Incorporated **CNN** for classification, **Autoencoder** for encoding, and **Gaussian Mixture Model** for clustering.

Sunspot Prediction Model | TensorFlow & Scikit-Learn | **GitHub Link** | **Sept'23**

- Designed LLM model predicting Sunspot activity with 87% accuracy, effectively capturing temporal patterns during the Solar Cycle.
- The model focuses on **time series forecasting** and preparing windowed datasets for **LSTM-based models**.

TECHNICAL SKILLS

Software	Tools	Languages	Packages
XFLR 5 | SolidWorks | Octave | EEGLAB | ERPLAB	Vs-Code | Docker | Git | GitHub | Google-Colab	Python | C | C++ | HTML | MATLAB	NumPy | Pandas | Pytorch | TensorFlow | Sk-Learn | Matplotlib | SpiceyPy | Flask

POSITIONS OF RESPONSIBILITY

President **COSMOLOGY CLUB** **May'23-Present**.

- **Spearheaded a team** of over **100 students** in organizing sessions on advanced topics in Astronomy & Astrophysics.
- Coordinated 10+ offline events featuring renowned speakers and global organizations like **IAPS**.

Airframes Technician **UAS – DTU** **Jan'23-March'23**

- Unified efforts with **25 students** to design, assemble, and test **UAVs and fixed-wing aircraft**.
- Achieved **a payload fraction of 0.503** for a 2 kg fixed-wing model using XFLR5.

Volunteer **SHUBHAKSHIKA-NGO** **March'23-Jun'23**

- Mentored **20 substance-addicted** school students in PCM and computer science and published official **funding reports for CSIR.**

EXTRA-CURRICULAR ACTIVITIES

- Completing a Summer School program on **AI and Deep Learning** at MLR Lab, DTU, with 50+ students on hands-on projects.
- Led a team of 30+ students to organize an event for 60 school students with the **International Association of Physics Students**.