PRATYAKSH RAJ

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Academic Details

Year	Degree	Institute	CGPA/Marks(%)
2024	B.Tech Engineering Physics	IIT Hyderabad	8.07
2019	XII (CBSE)	PMS	87%
2017	X (CBSE)	PMS	86%

Skills

Python, its libraries- pandas, sklearn, matplotlib, numpy, mlxtend
Keras
SQL, C/C++
Data science

Projects

Machine Learning based metallicity (under Dr. Shantanu Desai)-
Link: https://github.com/PratyakshRaj/ML-based-metallicity/blob/main/latex_report.pdf
1- extracting photometric data from SDSS sky server, using SQL.
2- we predicted the metallicity of galaxies better than 0.2 dex using regression model (ETR) after hyperparameterization.
3- Also, making a simulated catalog using guassian distribution to get error contribution due to experimental uncertainities.
4- Results are visualised by plotting metrices (rmse, olf) and ranking of independent variables

Star-Galaxy Classification (under Dr. Shanatnu Desai)-
Link: https://github.com/PratyakshRaj/Star-galaxy-classification/blob/main/alhambra.pdf
1- Here we used CNN and XGBoost to classify an object ,over COSMOS field, as Star or Galaxy with maxm. AUC of 0.995 .
2- we used ALHAMBRA survey -20 narrow band magnitudes and reducing them significantly via Correlation Heatmap and rankings.
3- ROC curves and AUC scores are used to measure performances of both algos. and overfitting curves are also used.

Relevant Courses

Data Science and Analysis
Introduction to AI
math courses: differential equations, probability, statistics, calculus, Linear algebra
Data structures and Algorithm
Digital systems

Scholastic Achievements

Honours in engineering Physics

Positions of Responsibility

Cepheid (astronomy and astrophysics club) - core member (2021-2022)

Extracurricular

Badminton