PRATYAKSH RAJ

ep20btech11017@iith.ac.in
9058414333

Academic Details

Pass. year	Degree	Institute	cgpa
2024	B.Tech in engineering Physics	IIT Hyderabad	7.86
2019	XII (CBSE)	PMS	8.7
2017	X (CBSE)	PMS	8.6

Projects

ML based metallicity (under Dr. Shantanu Desai) -

1) Using SDSS 5 band magnitudes and colors for predicting gas phase metallicity of galaxies.
2) Used five types of supervised regression models, their hypertuning and, comparasion of metrices and overfitting via graphs.
3) Combing photometric data with stellar mass and spectroscopic data and proving some well known results like mass-metallicity relationship and ratio of emission lines as better tracers of metallicity.
4) creating a simulated catalog using guassian distribution to calculate error contribution due to uncertainities in experimental observations

Star-Galaxy Classification (under Dr. Shantanu Desai) -

1) using ALHAMBRA isophotal magnitudes (20 optical bands NIR, F814w and FWHM) to classify stars and galaxies over COSMOS field, with hubble's morphology based classification as ground truth.
2) Using ANN and CNN models, checking their AUC scores and overfitting.
3) using ROC curve and AUC scores to get the contribution and importance of each magnitude towards classifying the object.

Relevant Courses (till 4th semester)

Mathematics- Computational Physics, differential equations, probability, statistics, calculus, Linear algebra, Non Linear dynamics

Physics- Special relativity, Thermodynamics, Electricity and magnetism, Fluid dynamics, Advanced Mathematical Physics, Optics

Position of responsibility

Core member in Cepheid (astronomy and astrophysics club)