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PUSHING THE FRONTIERS: INTEGRATING ARTIFICIAL INTELLIGENCE TO TRANSFORM
EXOPLANET ANALYSIS

Abstract

As of recent times many exoplanet systems as well as specific researches in the solar system are showing potential for future human establishments or areas of research. Considering the time and complexity of being able to utilize data sent by multiple satellites and systems deployed for the same, which also cannot allow us to fully visualize and explain places, ideas and concepts not previously explored. This paper focuses on using the upcoming and emerging technology for making generative models in the analysis of exoplanet and terrestrial object data provided from satellites and equipment space as of date as well using it for different areas like designing trajectories considering multiple factors. A number of Gen AI models use a class of machine learning technologies that can generate new content—such as text, images, music, or video—by analysing patterns in existing data. Taking Europa – Jupiters 6th Moon has shown many signs of having a global ocean of liquid water under its icy surface, maintained by tidal flexing and heating due to its eccentric orbit about Jupiter, and that ocean could potentially be habitable by microorganisms. This proves as an opportunity to design a specific Machine Based Model which analyses patterns in and around the provided data and form a complete analysis for further research. Investigate feature extraction methods that capture relevant information from observational data, such as light curves, radial velocity measurements, and other relevant parameters for exoplanet identification and characterization. Based on the observational data predicting key parameters, such as the radius, mass, and orbital characteristics of exoplanets can be achieved. To increase efficiency of the models they can be fine tuned for specific observational instruments or missions. Various validation procedures can be used to assess the performance and further improve it. They can complement traditional methods used in exoplanet data analysis and further strengthen it.