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Science Goals and Drivers for Future Exoplanet, Space Astronomy and Space Physics (2)

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PREDICTING EXOPLANETS USING PREDICTIVE ANALYSIS NEURAL NETWORK

Abstract

Exoplanets are any planets outside our solar system. Currently, there are 4914 confirmed exoplanets discovered using various techniques. This study introduces a predictive analysis neural network model that is capable of predicting the possibility of finding an exoplanet around a star. The neural network is trained on the existing exoplanet data taken from Nasa Exoplanet Archive. The Stellar parameters and spectral data of the parent star as well as the planetary parameters of planets are fed into the network. This neural network will be able to predict the presence of an exoplanet around a star by analyzing its stellar parameters. It will help to narrow the number of stars to be observed to find exoplanets around it. This model will be able to predict the presence of exoplanets irrespective of the method of detection of exoplanets. By studying the stellar spectrum this neural network will also be able to find possible exoplanet candidates via the radial velocity method. The radial velocity method of exoplanet detection relies on the shift in the spectrum of stars. The wobble in the spectrum is because the planet-hosting stars are not stationary, it moves in a small orbit in response to the gravitational tug of the planet. It will be also capable of predicting the presence of exoplanets in other galaxies.