**SESHADRI RAO GUDLAVALLERU ENGINEERING COLLEGE**

**(An Autonomous Institute with Permanent Affiliation to JNTUK, Kakinada)**

Seshadri Rao Knowledge Village, Gudlavalleru – 521 356, Krishna District

**Department of Computer Science and Engineering**

**Proforma for B. Tech Main Project**

Date: 25-09-2024

Batch. No.: C17

Name of the Student(s) along with Roll No. (s):

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Title of the proposed project work:

***Exoplanet Detection Using Machine Learning***

Abstract of the proposed work (in about 200 words):

We present a new machine learning approach for searching for exoplanets in extraterrestrial space, using data from the Kepler space mission. Our approach uses Python scripts for preprocessing and analysis of light curve data, with a focus on feature extraction and pattern training. We use machine learning algorithms such as Random Forest and Support Vector Machines, mainly to classify possible exoplanets based on their orbital characteristics

In our tests with the Kepler data set, we obtained 96 percent accuracy, 98 percent precision, 95 percent recall, and 96 percent F1 scores. These results illustrate the flight of our models, improve the accuracy of our detection of exoplanets and reduce false positives and negatives.

This study highlights the potential of machine learning to improve the accuracy and efficiency of exoplanet detection. By automating the classification process, our approach provides a scalable solution for future astrophysical surveys, enabling scientists to analyze large data sets and discover exoplanets well Our findings contribute to astronomy and demonstrate the transformative effects of machine learning.We present a new machine learning approach for searching for exoplanets in extraterrestrial space, using data from the Kepler space mission. Our approach uses Python scripts for preprocessing and analysis of light curve data, with a focus on feature extraction and pattern training. We use machine learning algorithms such as Random Forest and Support Vector Machines, mainly to classify possible exoplanets based on their orbital characteristics

In our tests with the Kepler data set, we obtained 96 percent accuracy, 98 percent precision, 95 percent recall, and 96 percent F1 score. These results illustrate the effectiveness of our models in accurately detecting exoplanets and reducing false positives and negatives.

This study highlights the potential of machine learning to improve the accuracy and efficiency of exoplanet detection. By automating the classification process, our approach provides a scalable solution for future astrophysical surveys, enabling scientists to analyze large data sets and discover exoplanets well Our findings contribute to astronomy and demonstrate the transformative effects of machine learning.

**Implementation Tools Required:**

**Python:** The core language used for data analysis and machine learning.

**NumPy and Pandas:** For data manipulation and preprocessing tasks.

**Scikit-learn:** Provides machine learning algorithms for model training.

**SciPy:** Facilitates scientific computing tasks.

**Matplotlib and Seaborn:** For visualizing data distributions and model performance.

**Plotly:** Offers interactive data visualizations.

**PyCharm or VSCode:** IDEs for structured coding and debugging.

**NASA Exoplanet Archive or Kepler Data:** Provides raw data for training and evaluation.

**Git and GitHub:** For version control and project collaboration.

References: [https://ieeexplore.ieee.org/document/10084656/citations#citations](https://ieeexplore.ieee.org/document/10084656/citations%23citations)

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Signature of the students

Remarks by the Guide:

Signature & Name of the guide with date

Signature of B.Tech. Project Coordinator with date

Signature of HoD with date