

A Machine Learning Based Approach for the Identification and Estimation of Pulsars upon Statistical Analysis

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Abstract: *The life cycle of stars has been an extensive topic of study in the field of astrophysics as it gives us a better understanding of the formation of planets and life. Stars shine by burning their hydrogen fuel in a nuclear fusion reaction. The energy released by this reaction keeps a star from collapsing onto itself due to its own gravity. But, towards the end of its life, a star depletes all of its fuel and there is nothing to help it from collapsing onto its own gravity. A star that weighs about 3 to 4 solar masses forms either a pulsar neutron star or a magnetron neutron star. Study of these stars is very important as it gives better insight into the formation and destruction of stars and planets. This study aims to develop a precise and effective machine learning model for detecting pulsar stars. Efforts have been put into evaluating the performance of a number of well-known machine-learning algorithms including K-Nearest Neighbors, Multiple Adaptive Regression Spline (MARS), neural network classifiers, etc., for identifying Pulsars using R programming language*

Keywords: pulsar stars, multiple adaptive regression spline, k nearest neighbors, neural networks, machine learning, R programming.

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APPENDIX

GitHub repository: <https://github.com/devika1402/Identification-of-Pulsar-star>