

IAF SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS
(A7)Interactive Presentations - IAF SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND
SOLAR-SYSTEM SCIENCE MISSIONS (IP)Author: Mr. VICTOR BASU
IndiaPREDICTION OF ASTEROID DIAMETER WITH THE HELP OF MULTI-LAYER PERCEPTRON
REGRESSOR**Abstract**

Predicting the diameter of an asteroid with help of artificial neural network technique. We have used Multilayer Perceptron Regressor algorithm to estimate the diameter of the asteroid with higher accuracy and least error.

In this research paper, we have discussed how the concept of artificial neural network could be utilized to estimate the diameter of an asteroid. In this research, we have used the Multilayer Perceptron algorithm as the base algorithm to predict the diameter. We have used different algorithms to test and evaluate the performance of the model with the same dataset but Multilayer Perceptron algorithm performed best in these type of situations with higher accuracy and least error while prediction. The dataset we have used is officially maintained by NASA Jet Propulsion Laboratory. In this dataset we have considered all types of asteroids such as asteroids which are grouped as Near Earth Objects(NEO), Potentially Hazardous Objects(PHA), we have also considered all the possible asteroid orbit classes as mentioned in the official website of JPL(Jet Propulsion Laboratory). The columns of the dataset also contain all the physical and basic properties of an asteroid. We have used Mean Absolute Error, Mean Squared Error, Median Absolute Error, Explained Variance Score and R2-Score as metrics to evaluate and compare the performance of different regression algorithm against the same dataset. The R2-Score which we have achieved through Multilayer Perceptron is 0.9665626238, along with it we have achieved Explained Variance Score of 0.9665631410, the Mean Absolute Error for this model is 0.4306106593, Mean Squared Error is 3.3754211434 and Median Absolute Error is 0.2242921644.