Kaggle Dataset:

https://www.kaggle.com/datasets/basu369victor/prediction-of-asteroid-diameter

Abstract:

In the study of objects within our solar system, there have been many attempts to classify groups of objects to help estimate their properties. However, the classical approach can miss the subtle correlations that machine learning techniques thrive on. This study aims to enhance the prediction of asteroid features using machine learning algorithms. We aim to utilize a dataset provided by Jet Propulsion Laboratory of California Institute of Technology, and apply various regression techniques to achieve higher accuracy and low error rates in feature prediction. The dataset comprises 31 features for 839,714 objects, including their names, semi-major axis, eccentricity, inclination, orbital period, diameter, and other orbital elements. Our project focuses on utilizing feature engineering, linear and polynomial regression models. Additionally, we aim to use clustering algorithms to attempt to classify asteroids. Our findings contribute to the growing intersection between machine learning and astronomy, providing robust tools for potential applications in space warning systems.