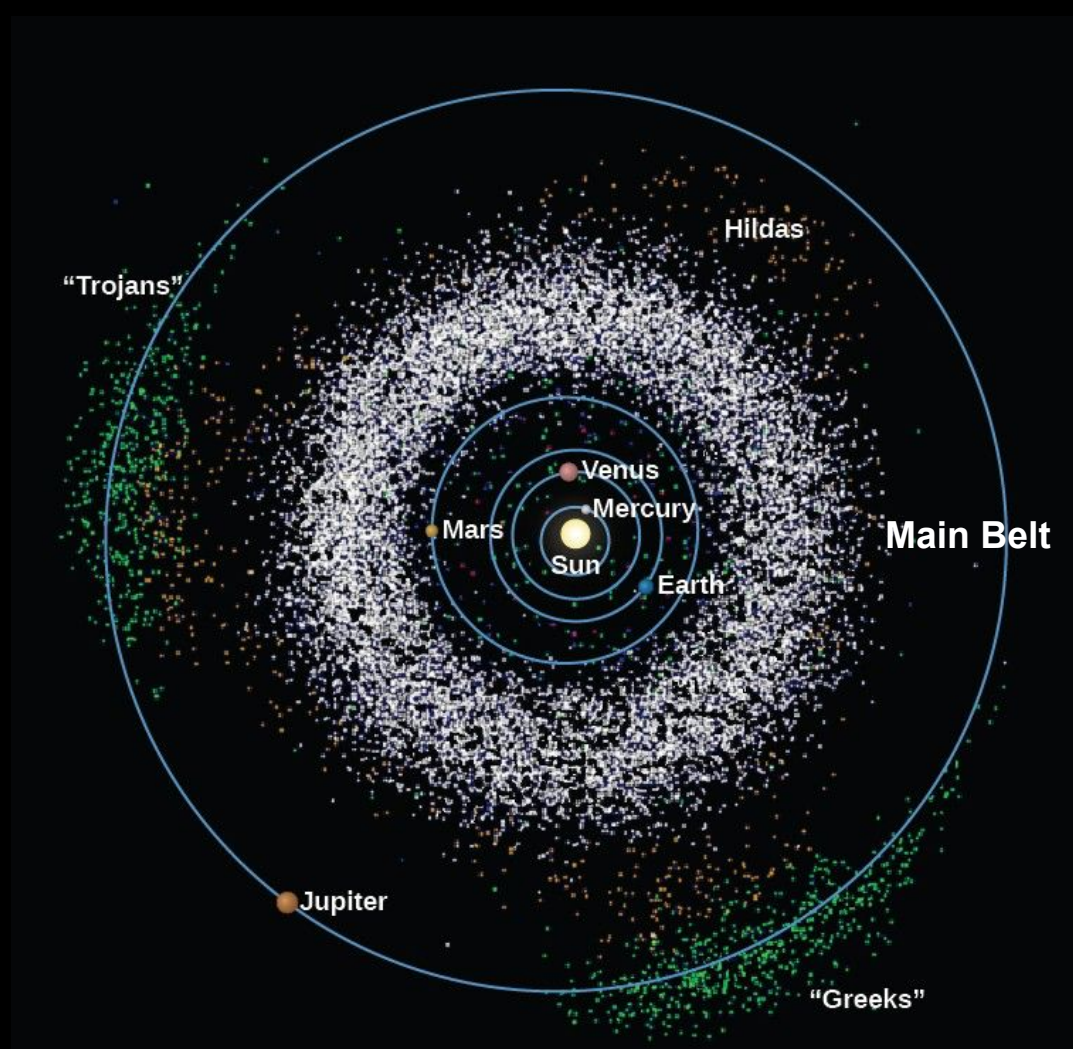# Machine Learning for Asteroid Classification

Rachel Hausmann

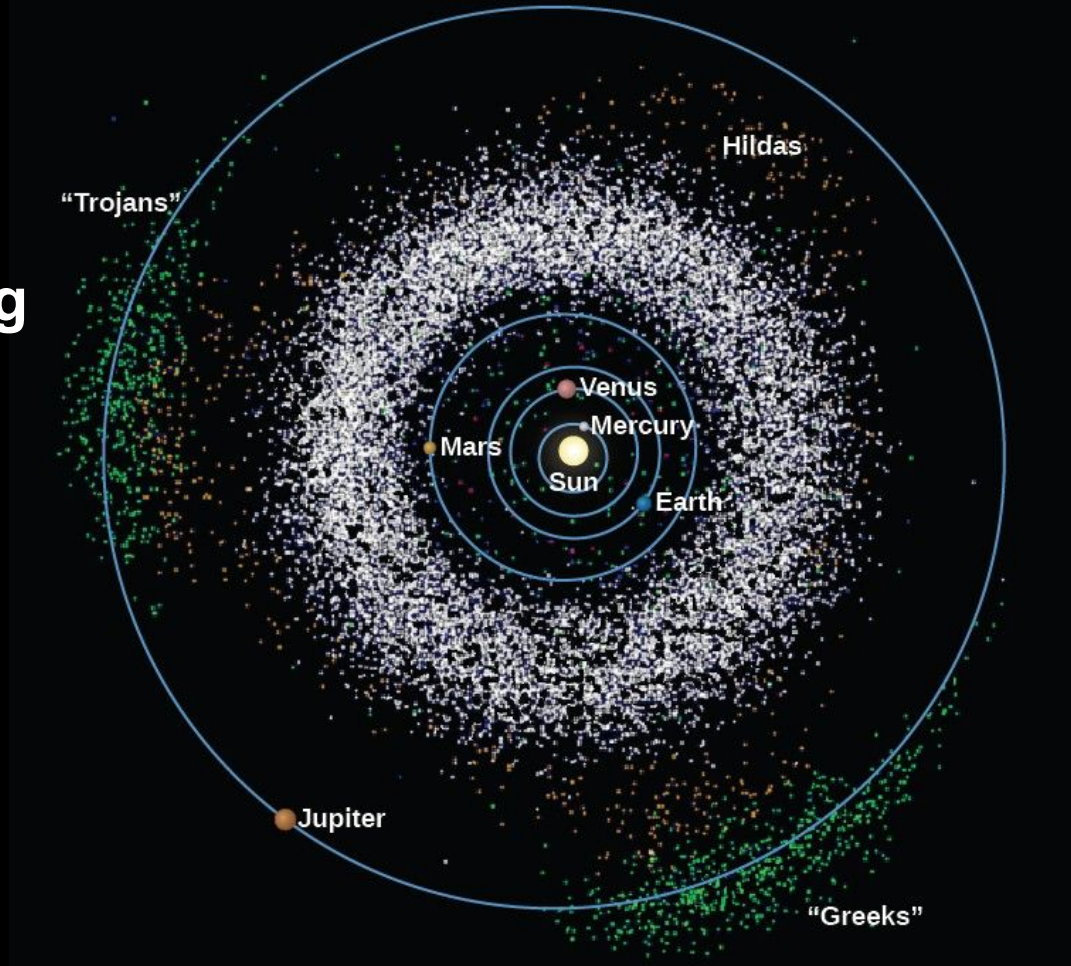# Motivation

Asteroids can be hazardous.

822,000

known Asteroids

Impacts

- **Efficient asteroid classification modeling**

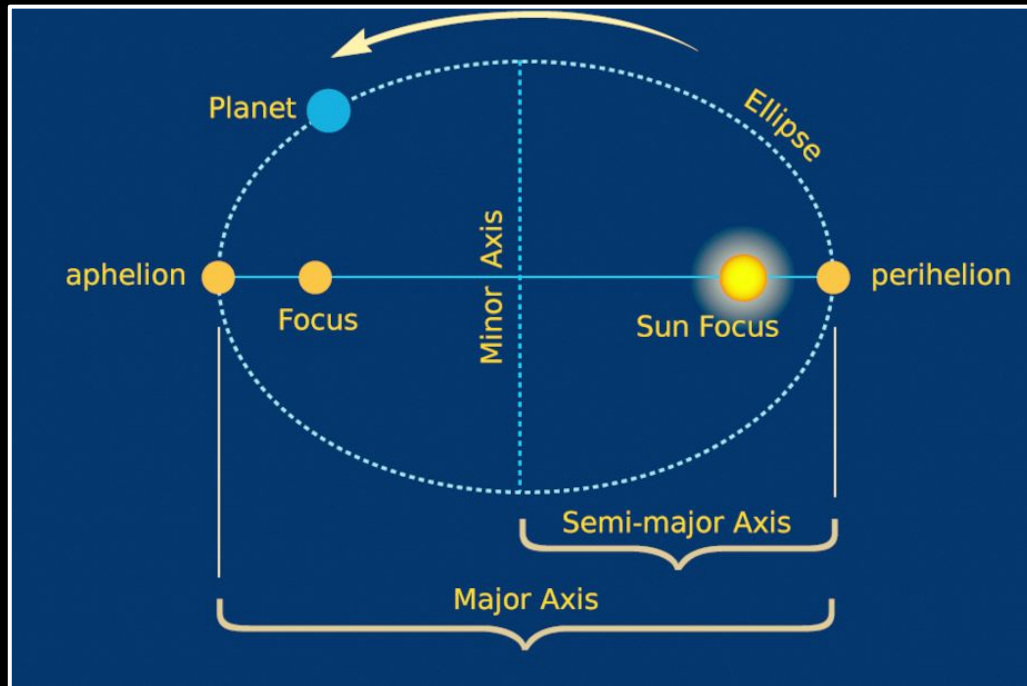- **Scientific value in monitoring asteroid movement**

Dataset: NASA's Asteroid Database

~140,000
observations

11
Orbital Classes

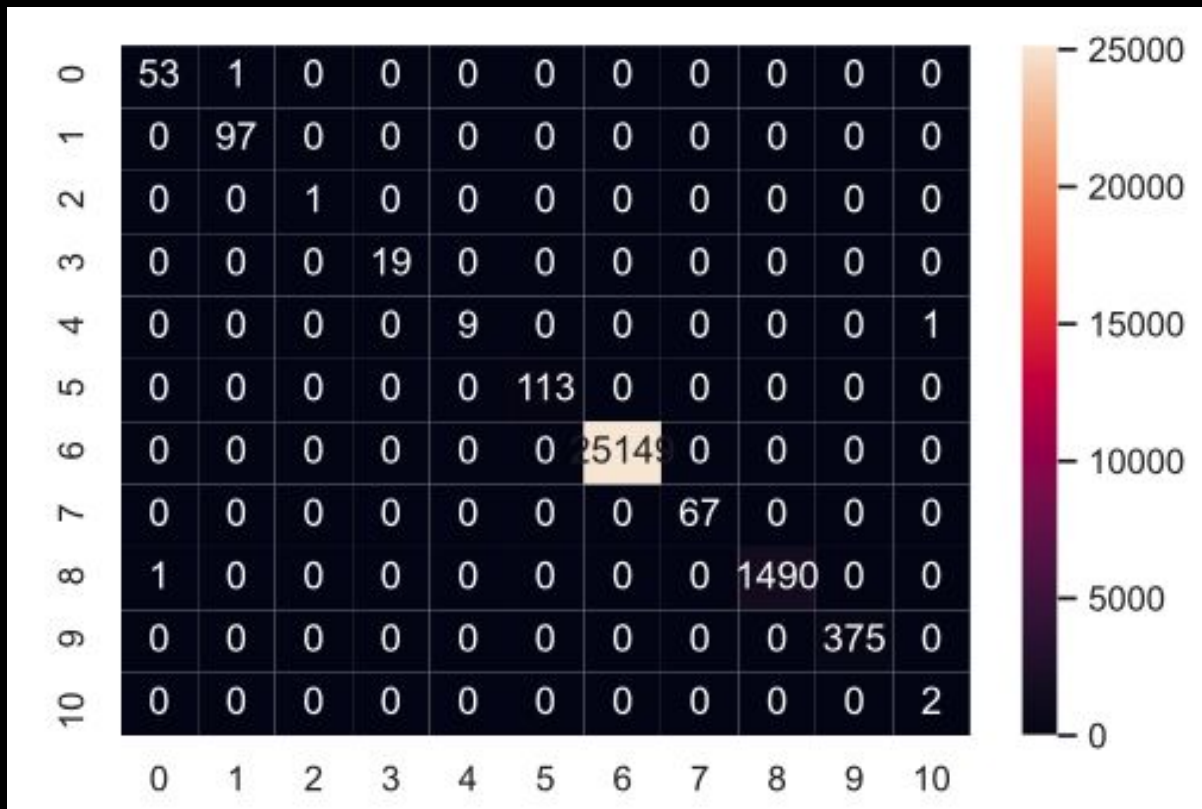**13**
Features

Classification Methodology

- **Metric Focus:**
  <u>Accuracy</u>

- **Model: Random Tree**
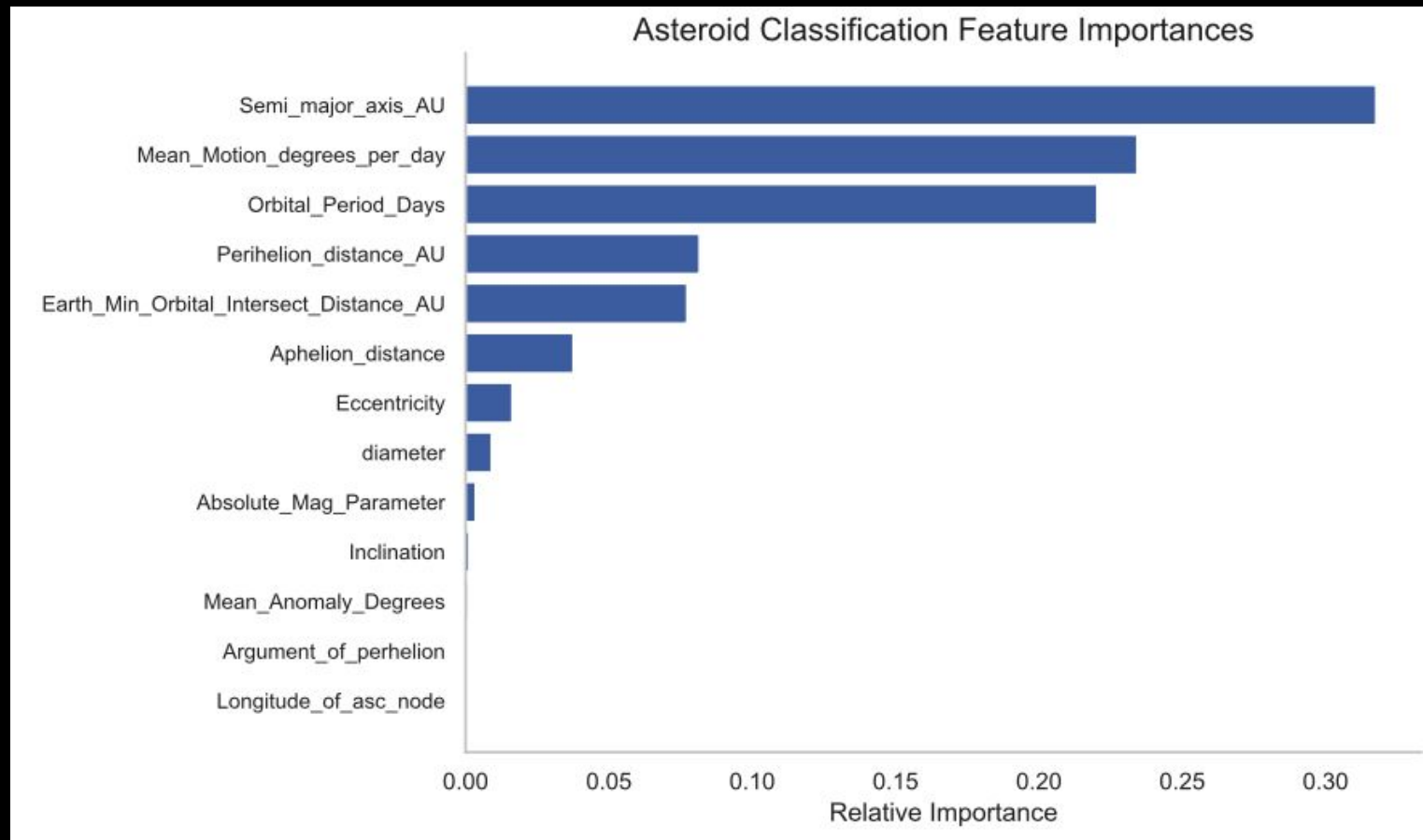 - **Stratified K Split**
  - **Cross Validation**

Classification Methodology

Accuracy Score

0.9998 +/- 0.0001

Results

Asteroid Classification Feature Importances

Future Work

-Start removing features to determine the variations of feature selection that still result in accurate classification.

Thank you.