# Proposal: Asteroid Classification for Near Earth Prediction

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## Need

Earth is as vulnerable to asteroid impact as any other planet. Various space agencies have extension data on asteroids in our solar system. There is a need to model whether one of these asteroids is going to be near to Earth. If the celestial mechanics of an asteroid changes the model can be updated to reclassify that space object as either "near-Earth" or "not near Earth".

## Data Description

Data was downloaded from Kaggle. The original dataset was provided by NASA. Using the properties of asteroids, it can be determined whether they are going to be near Earth or not. Below are the columns of each observation. The dataset contains 21,400 near earth asteroids, 818,000 non-near Earth objects, and 6,000 nulls. Below are the features contained in the dataset regarding each observed asteroid:

a - semi-major axis(au)

e - eccentricity

i - Inclination with respect to x-y ecliptic plane(deg)

om - Longitude of the ascending node

w - argument of perihelion

q - perihelion distance(au)

ad - aphelion distance(au)

per_y - Orbital period(YEARS)

H - Absolute Magnitude parameter

neo - Near Earth Object / N or Y

pha - Physically Hazardous Asteroid - N or Y

moid - Earth Minimum orbit Intersection Distance(au)

n - Mean motion(deg/d)

per - orbital Period(d)

ma - Mean anomaly(deg

## Tools
- Python Pandas and SQLalchemy will be used to view the dataset and clean the data.
- SKlearn will be used for model building.
- Tableau will be used for data visualization.

## MVP Goal

Provide a base model with the cleaned data. Find supplemental data (external meteorite data) to run the model on.