Lucifer's Screwdriver

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Challenge

- Develop a:
  - hypothetical method
  - concept note
  - simple prototype
- demonstrating how machine learning can help us avoid the same fate as the dinosaurs.

Solution

k-Nearest Neighbor classifier to identify

Potentially Hazardous Objects (PHA)

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- Two important criteria
  1. Will it hit us?
  2. Is it big?
- We quantify this with two things
  1. Minimum Orbit Intersection Distance (MOID) less than 0.05 AU.
  2. Infrared brightness exceeds a minimum threshold ($H < 22$).

MOID Calculation

- Take orbital parameters measured by the Minor Planet Center
  - a, e, i, ω, Ω
- Use existing simulation software to calculate the MOID between the Earth and each object.

k-NN Classification

$$(a, e, i, \omega, \Omega, H) \overset{k\text{NN}}{\rightarrow} \text{PHA?}$$

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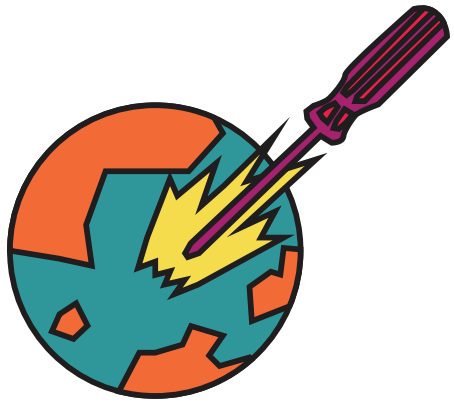

https://github.com/dwysocki/lucifers-screwdriver/