AstroQuestAI

An AI-driven search for Earth 2.0 using NASA's exoplanet data

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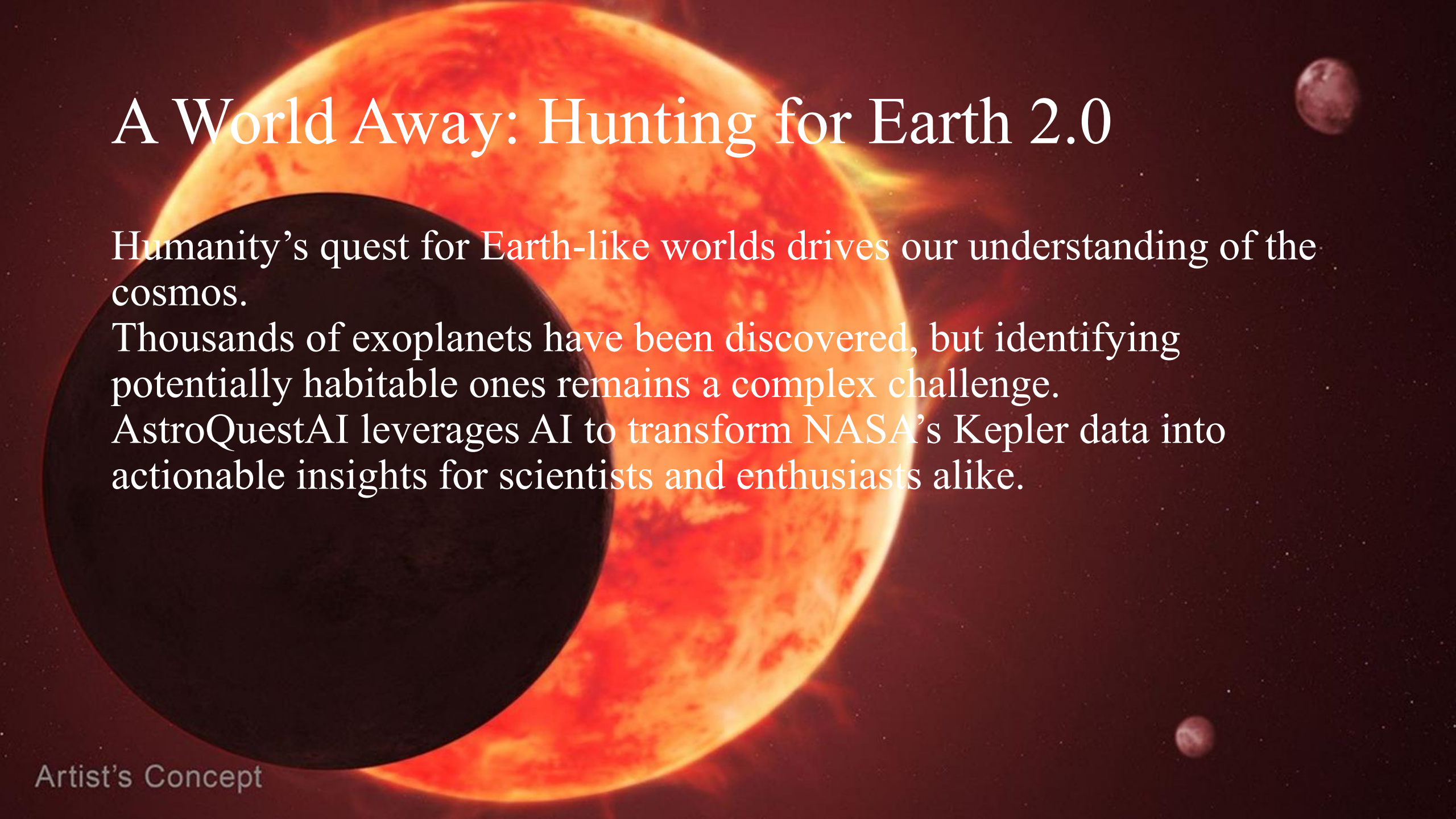
A World Away: Hunting for Exoplanets with AI

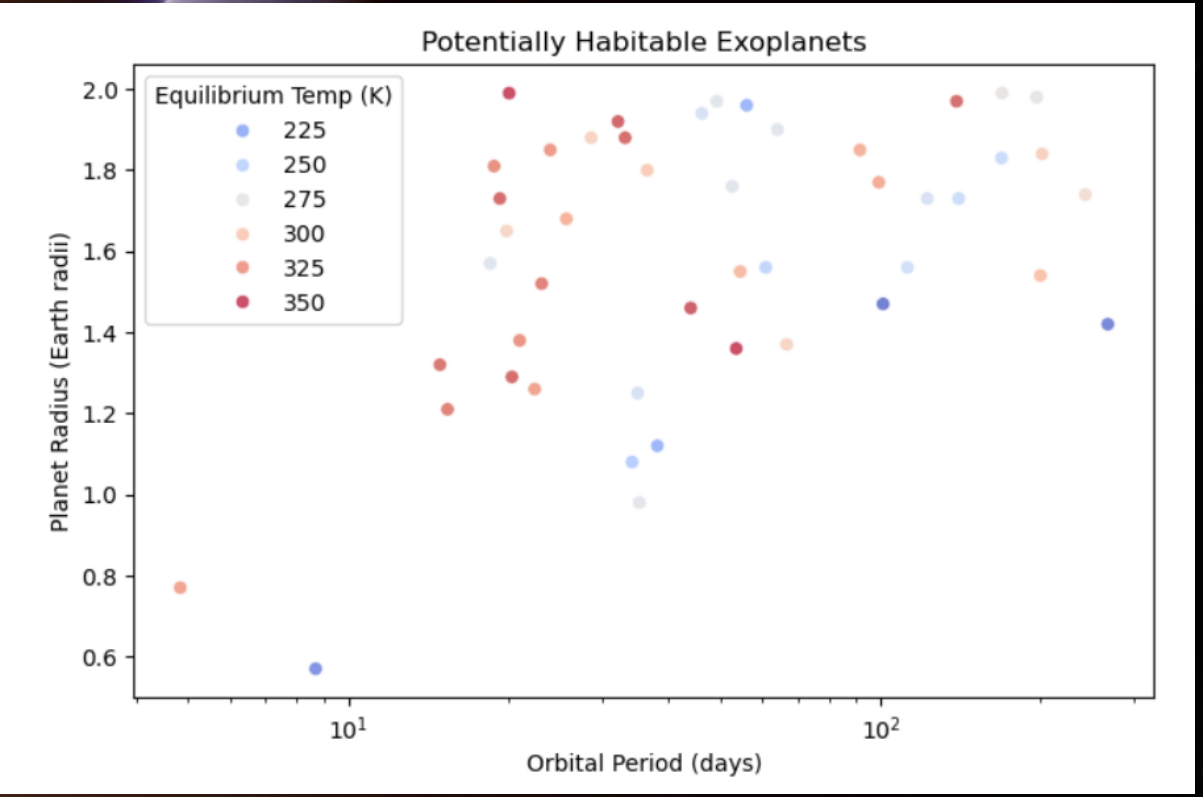
A World Away: Hunting for Earth 2.0

Humanity’s quest for Earth-like worlds drives our understanding of the cosmos.
Thousands of exoplanets have been discovered, but identifying potentially habitable ones remains a complex challenge.
AstroQuestAI leverages AI to transform NASA’s Kepler data into actionable insights for scientists and enthusiasts alike.



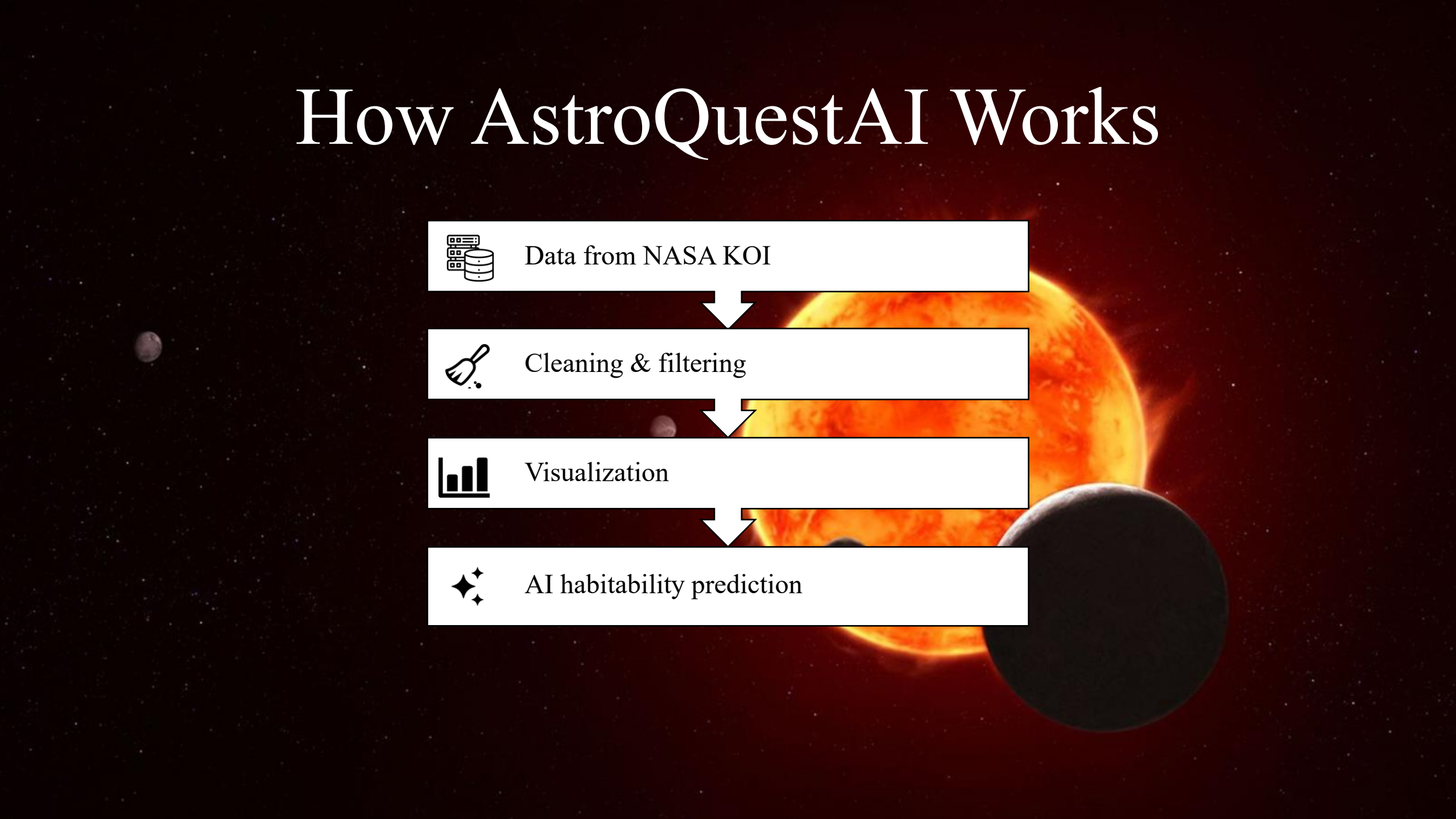
AstroQuestAI: AI-driven Exoplanet Analysis Tool

- Analyzes NASA Kepler exoplanet data to identify potentially habitable planets.
- Applies AI/ML models for habitability prediction.
- Generates clear visualizations of orbital periods, planet sizes, and temperatures.
- Summarizes key astrophysical metrics for quick insights.



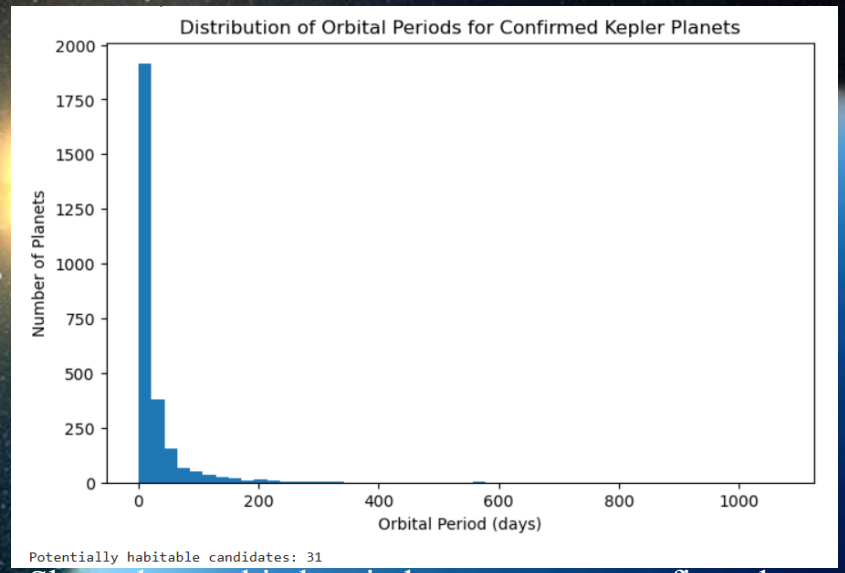
Scatter plot of potentially habitable exoplanets discovered by Kepler. Radius vs. orbital period colored by equilibrium temperature.

How AstroQuestAI Works

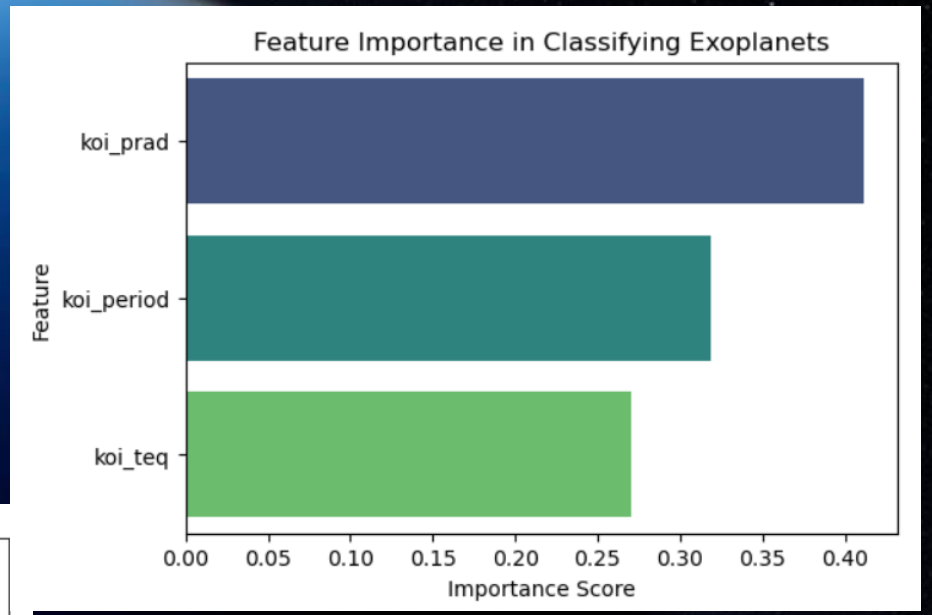


Key Features & Benefits

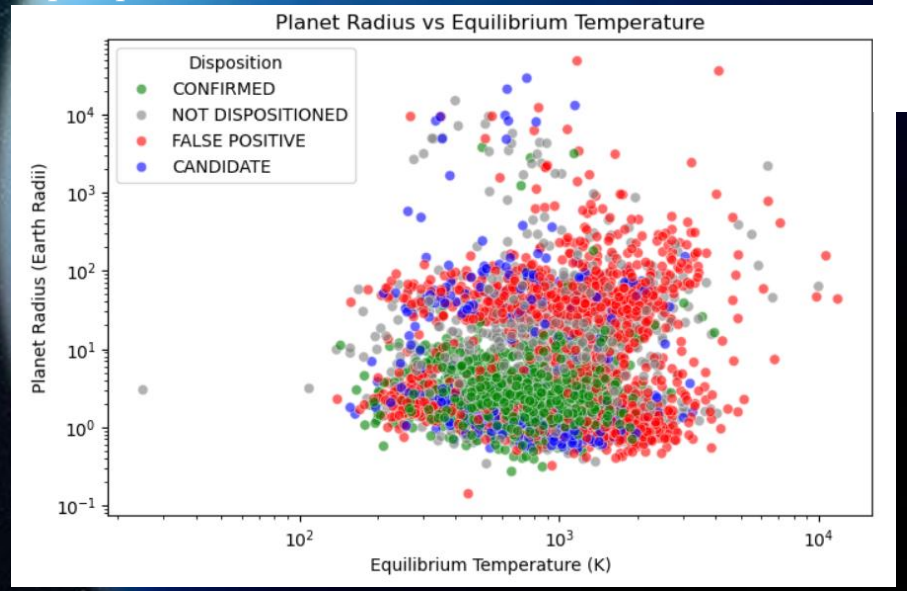
- **Habitability Prediction:** AI identifies Earth-like exoplanet candidates.
- **Clear Visualizations:** Orbital periods, planet radii, equilibrium temperatures.
- **Public Engagement:** Makes NASA data accessible to educators, students, and enthusiasts.



Shows how orbital periods vary across confirmed Kepler planets.



Highlights which features are most important in predicting habitability.



Relationship between planet radius and equilibrium temperature.

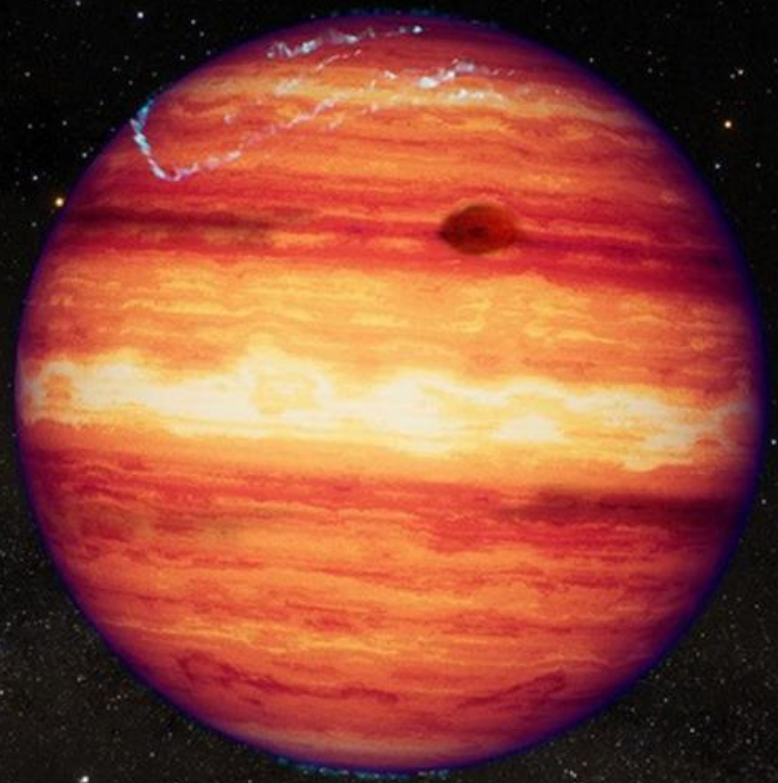
Artist's Concept

Tools & AI Use

Python, pandas, matplotlib, seaborn, scikit-learn, Jupyter Notebook

AI used for habitability prediction (Random Forest Classifier)

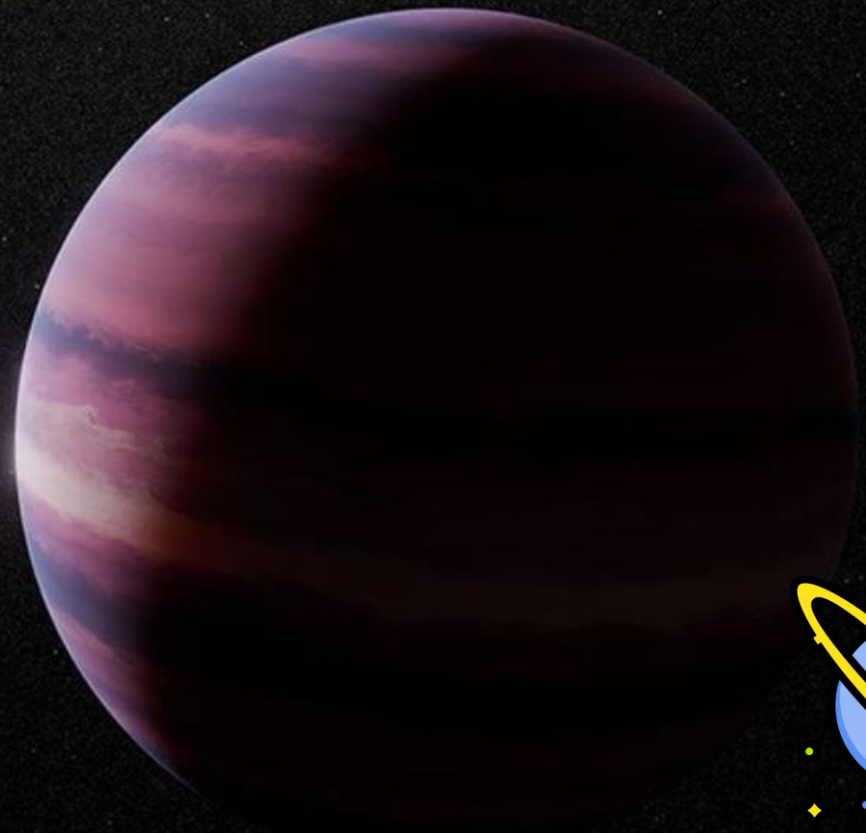
Data sourced from NASA KOI dataset



Artist's Concept

Future Vision / Impact

- Accelerating the search for “Earth 2.0” using AI-driven exoplanet analysis.
- Engaging public, students, and scientists with interactive NASA data.
- Next steps: expand datasets, include more planetary features, possibly make a small web demo.



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