AstraScope — AI-Powered Exoplanet Classifier

AstraScope is a machine learning–based platform that classifies potential exoplanets using NASA's open datasets from the Kepler, K2, and TESS missions. Its goal is to make exoplanet discovery accessible to everyone — from researchers to space enthusiasts — through intelligent automation and intuitive visualization.

Turning data into discovery.

👨‍💻 **Jonathan Cárdenas – Software Engineer**

Exploring the universe through code and AI.

Inspiration

The search for new worlds has always inspired humanity. What if we could make this search accessible to everyone — not just scientists? Our goal was to use AI to help anyone classify potential exoplanets from NASA's data.

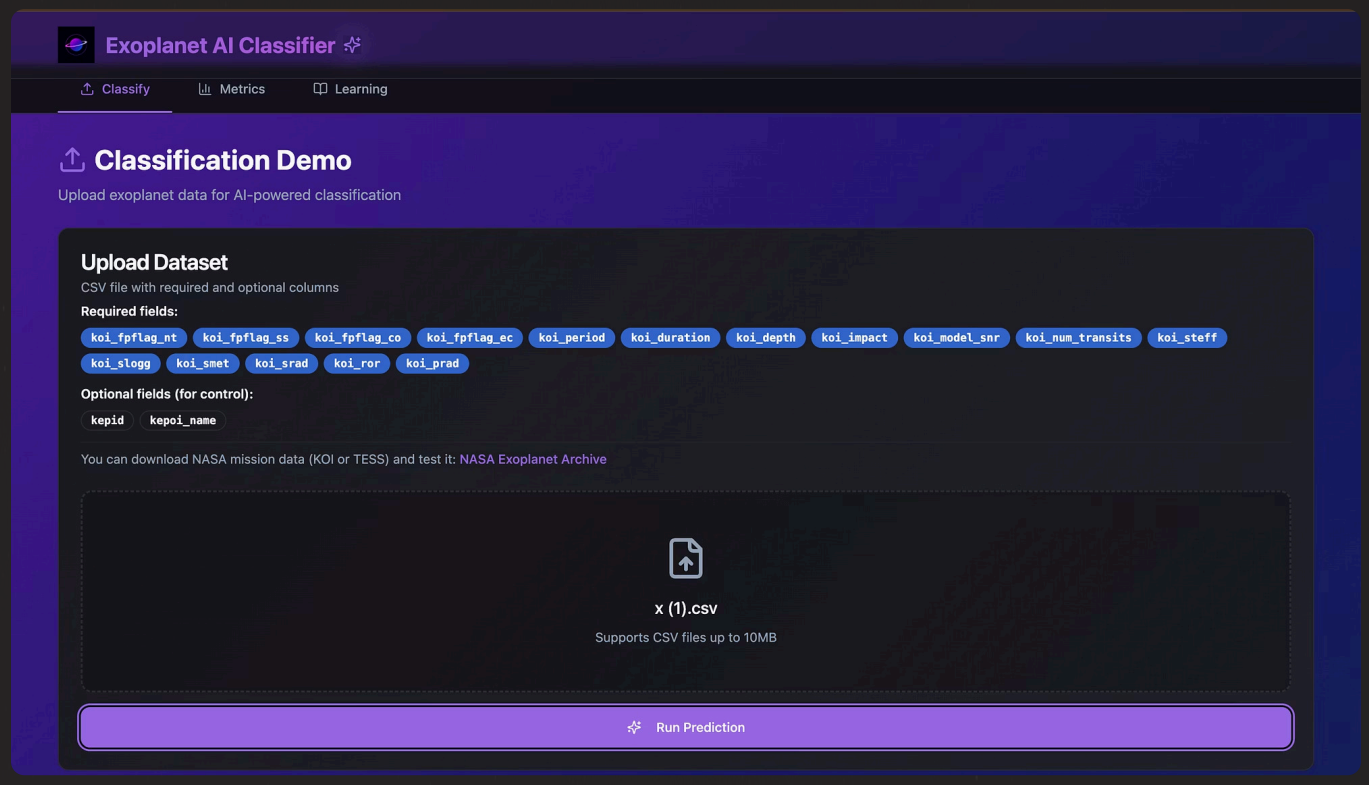
AI meets the Cosmos

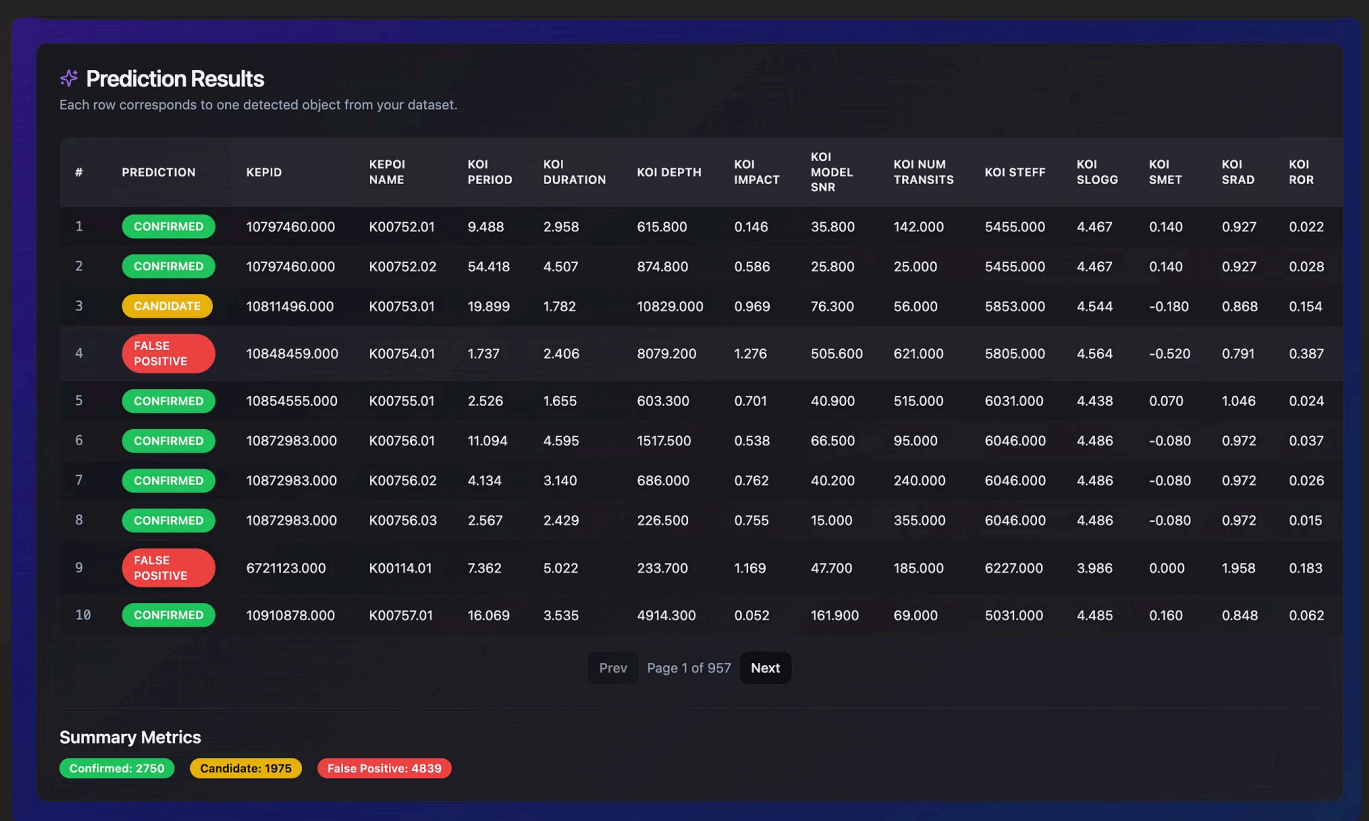
democratizing exoplanet discovery

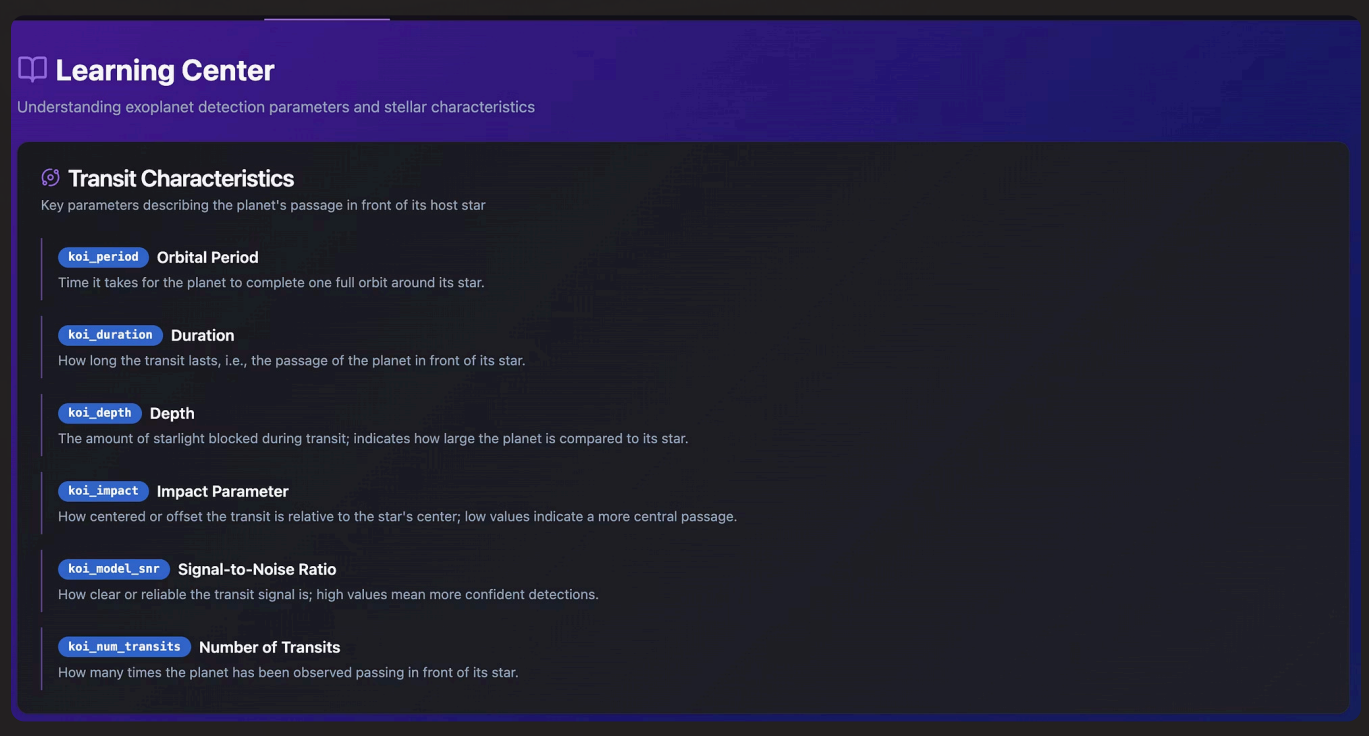
The Solution: AstraScope

We built AstraScope — an AI-powered platform that analyzes NASA's open datasets (Kepler, K2, and TESS) to classify planetary candidates, confirmed exoplanets, or false positives.

AstraScope







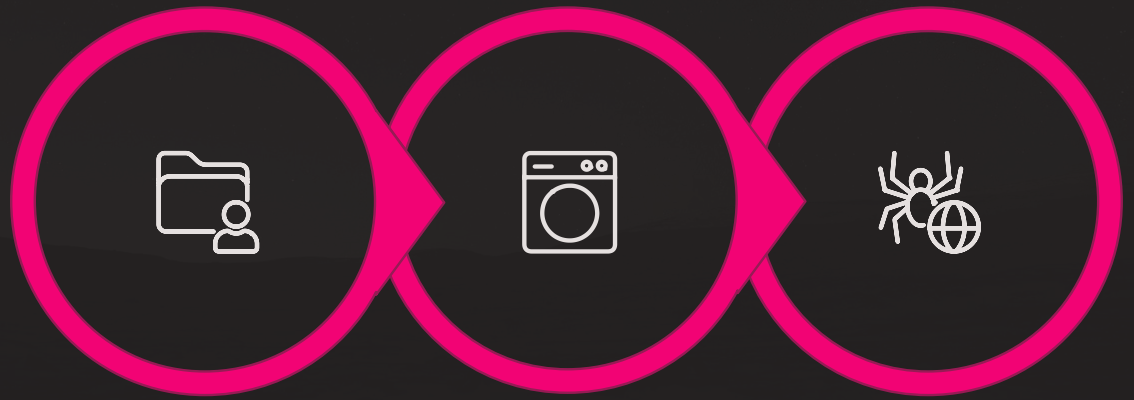
Candidate

Confirmed

False Positive

How It Works

AstraScope uses an XGBoost machine learning model trained on curated NASA datasets. Users can upload their own CSV files, and our system predicts classifications while showing model confidence, feature importance, and confusion matrix metrics — all in real time.



Input CSV **ML Model** **UI Metrics**

User Experience

We designed an interface that allows scientists, students, and enthusiasts to visualize results intuitively. Even without ML knowledge, users can explore how planetary features like orbital period or stellar temperature affect predictions.

Upload CSV

Easily import your datasets to begin classification predictions.

Prediction Table

View classification results with confidence scores in an intuitive table format.

Real-time Metrics

Understand model performance with feature importance and confusion matrix insights.

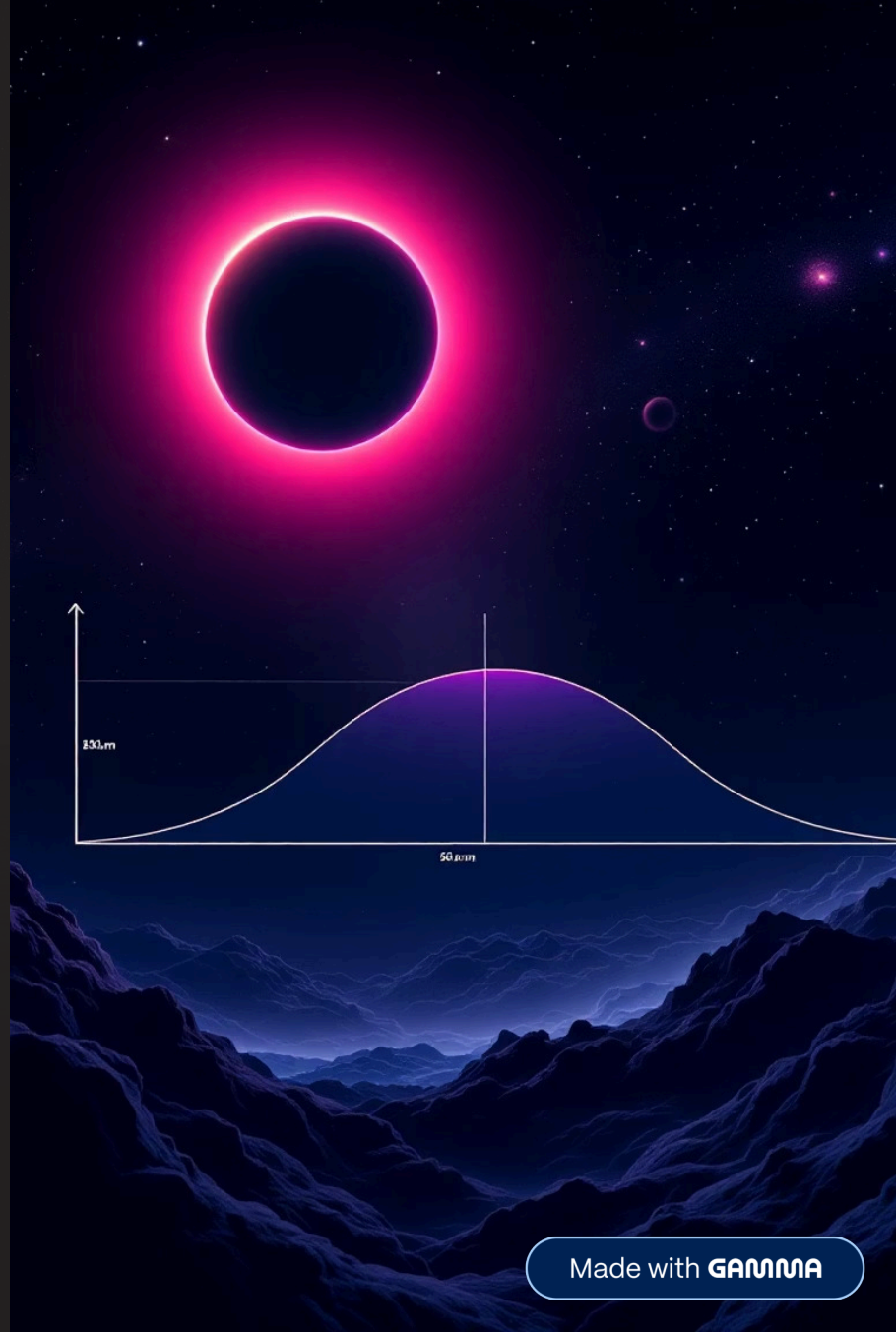
Accessible Science for Everyone.

Data Foundation

Our model was trained using real NASA data: the Kepler Objects of Interest (KOI), K2 Candidates, and TESS Objects of Interest (TOI). We focused on high-impact features such as transit depth, orbital period, and signal-to-noise ratio.

Key Features Analyzed:

- Transit depth
- Orbital period
- Signal-to-noise ratio



Impacting the Future

AstraScope bridges science and accessibility — empowering anyone to contribute to exoplanet discovery. In the future, it could evolve into a collaborative tool where users help refine models and accelerate planetary science.

We're not just finding planets — we're building the tools to find the next Earth. 🌍