

Project Aeromed Exoplanet Detector

The Aeromed Exoplanet Detector project is dedicated to the creation of an AI-driven tool for identifying exoplanets, utilizing extensive databases from Caltech and NASA. In addition, we have developed an intuitive application using Streamlit, which facilitates the visualization and analysis of the gathered data. Our objective is to improve the detection process and foster a deeper understanding of potential exoplanets.



Introduction to Exoplanet Detection

The study of exoplanets has grown exponentially since the first confirmed discovery in 1992. Advanced detection methods reveal vital information about a planet's atmosphere and surface conditions, contributing to our understanding of planetary formation and evolution.

1 What Are Exoplanets?

Exoplanets are planets that orbit stars outside our solar system. Their detection is crucial for understanding planetary systems and possibly finding life beyond Earth.

2 Importance of Exoplanet Detection

Discovering exoplanets helps astronomers learn about the diversity of planetary systems and the potential for life elsewhere in the universe.

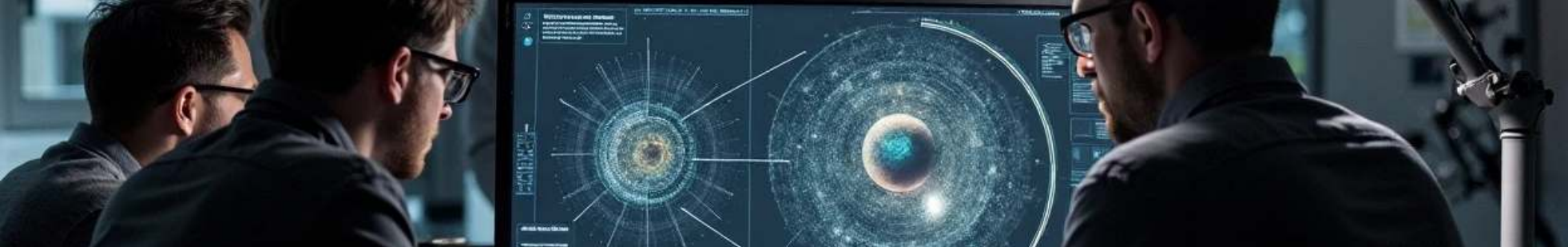
3 Role of AI in Detection

AI algorithms analyze vast datasets from telescopes and space missions, identifying subtle signals indicative of exoplanets.

Data Acquisition Process

The Data Acquisition Process is crucial for gathering and preparing astronomical data from reliable sources. This involves harnessing extensive databases, preprocessing the data meticulously, and integrating diverse datasets for enhanced analysis, all of which contribute to accurate exoplanet detection.





AI Model Development in Exoplanet Detection

Choosing the Right AI Algorithms

Balancing complexity and interpretability for astronomers.

Training the Model

Utilizing labeled data for supervised learning and regular validation checks.

Model Optimization Techniques

Implementing hyperparameter tuning to refine predictive performance.



Application Development with Streamlit

1

Streamlit Overview

Streamlit is a powerful tool for creating web applications quickly and easily, making it ideal for visualizing complex models and datasets.

2

Application Features

The application enables users to upload datasets, run the AI model, and visualize results seamlessly.

3

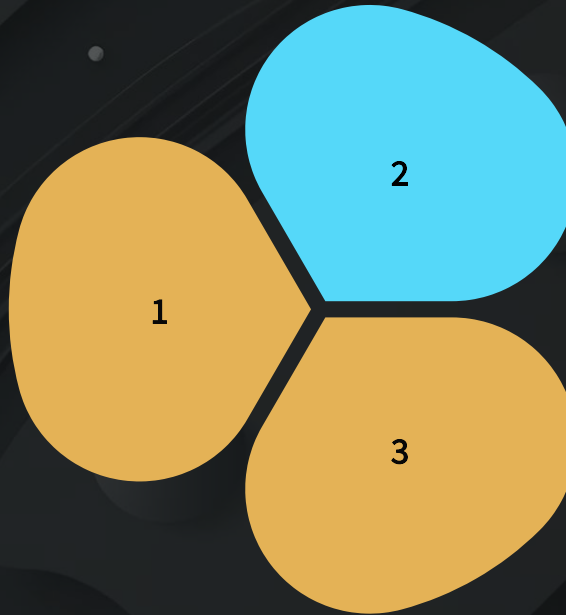
User Experience Considerations

A user-friendly interface ensures even those without extensive expertise can engage effectively.

Conclusion and Future Directions

Impact on Exoplanet Research

The AI-based exoplanet detector aims to revolutionize the way astronomers identify and study exoplanets.



Potential Collaborations

Future collaborations with research institutions and universities could amplify the project's impact.

Vision for the Future

The project's ultimate goal is to contribute significantly to the ongoing search for life beyond Earth.