



# Detection and Analysis of Exoplanets using Machine Learning Techniques

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## Problem Statement

Based on the myriad data available about space exploration, is it possible to provide an estimate of the number of other exo-planets in the Universe that are able to maintain life?

## Motivation

Based on algorithms and programs provided in research, it is possible to reign in the available data and provide a predictable and repeatable method to determine whether exo-planets in the Universe are habitable. Having an affinity of space, data science, and the hosting of large data sets provides the background for such experiments to thrive.

## Methodology

Deep learning and machine learning techniques are widely used in application of various exo-planet scientific research. This research aims to explore various techniques and methods to expand upon ordinary algorithm-based approaches used in the detection of planets outside the Solar System. The research goal is to essentially create a model to detect the whether an exoplanet has the ability to foster life with its current bio and atmosphere.

## Milestones

### I. Collect Data

[NASA's API](#) allows for extraction of data concerning known exoplanets and properties such as the nearest sun, neighboring planets, and the galaxy it lives in. Pulling this data through API and cleaning it to be in a format which is ready to be passed into a model.

### II. Data Storage on the Cloud

Once the data has been collected and cleaned, the data will be housed in S3 on AWS for storage.

### III. ETL

An ETL process will be completed to have a deeper understanding of the data structure, pull significant trends, and discover any dependencies.

### IV. Machine Learning Models

Machine learning models will be applied to determine if there are attributes which will predict whether a planet is habitable. Statistical analysis will be applied to confirm model accuracy and predictability.

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