# Animal Behavior Predictions

## Project Overview

The "Animal Behavior Predictions" project aims to analyze and predict animal behaviors using accelerometer data. The primary focus of this project is to classify various animal behaviors based on the sensor data collected from accelerometers. The behaviors of interest include standing, eating, ruminating, and resting.

## Project Details

- \*\*Dataset:\*\* The dataset used for this project consists of accelerometer readings that have been processed to extract features relevant for predicting animal behaviors.

- \*\*Technologies Used:\*\*

- \*\*Python:\*\* For data processing and model building.

- \*\*NumPy, Pandas:\*\* For data manipulation and analysis.

- \*\*Matplotlib, Seaborn:\*\* For data visualization.

- \*\*Scikit-learn:\*\* For machine learning models and evaluation.

## Features

- \*\*Data Preprocessing:\*\* Includes cleaning and feature extraction from raw accelerometer data.

- \*\*Machine Learning Models:\*\* Implemented logistic regression and random forest classifiers to predict animal behaviors.

- \*\*Model Evaluation:\*\* Utilized cross-validation, confusion matrix, and classification report to assess model performance.

## Installation and Setup

1. \*\*Clone the Repository:\*\*

```bash

git clone https://github.com/SharoonCharles/Animal-Behavior-Predictions.git

```

2. \*\*Navigate to the Project Directory:\*\*

```bash

cd Animal-Behavior-Predictions

```

3. \*\*Create a Virtual Environment:\*\*

```bash

python -m venv venv

```

4. \*\*Activate the Virtual Environment:\*\*

- \*\*Windows:\*\*

```bash

venv\Scripts\activate

```

- \*\*macOS/Linux:\*\*

```bash

source venv/bin/activate

```

5. \*\*Install Required Packages:\*\*

```bash

pip install -r requirements.txt

```

## Usage

1. \*\*Data Preparation:\*\*

Ensure that the dataset is placed in the correct directory as specified in the script. Update paths if necessary.

2. \*\*Running the Project:\*\*

Execute the Jupyter Notebook or Python script to run the analysis and model training.

```bash

jupyter notebook