Project Documentation

1. INTRODUCTION

Project Title: Prosperity Prognosticator: Machine Learning for Startup Success Prediction

Team Members:

Role	Name
Team Leader	Ammapalli Bhargavi Sai
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2. PROJECT OVERVIEW

Purpose

The purpose of this project is to develop a machine learning–based web application that predicts whether a startup will be acquired or closed. The system helps investors and entrepreneurs make data-driven decisions and reduces financial risk.

Features

- Startup success prediction using Random Forest
- Web interface for user input
- Probability score output
- Real-time prediction
- Error handling for invalid inputs

3. ARCHITECTURE

Frontend

The frontend is built using HTML forms that allow users to input startup details such as funding amount, funding rounds, milestone years, and relationships.

Backend

The backend is developed using Flask. It receives user input, loads the trained machine learning model, processes the data, and returns the prediction result.

Machine Learning Model

A Random Forest classifier is trained using the Kaggle startup dataset. The model is saved as model.pkl and used for real-time predictions.

4. SETUP INSTRUCTIONS

Prerequisites

- Python installed
- Required libraries: pandas, numpy, scikit-learn, flask, joblib

Installation Steps

1. Clone the repository
2. Install dependencies

pip install pandas numpy scikit-learn flask joblib

3. Train the model

python train_model.py

4. Run the application

python app.py

5. Open in browser
   http://127.0.0.1:5000

5. FOLDER STRUCTURE

```
startup-success-prediction
├── app.py
├── train_model.py
├── model.pkl
├── startup.csv
└── templates
    ├── home.html
    ├── adaptivity.html
    └── result.html
```

6. RUNNING THE APPLICATION

1. Run train_model.py to generate the trained model
2. Run app.py to start the Flask server
3. Access the application in the browser
4. Enter startup details and click Predict

7. INPUT PARAMETERS

- funding_total_usd
- funding_rounds
- age_first_funding_year
- age_last_funding_year
- age_first_milestone_year
- age_last_milestone_year
- relationships

8. OUTPUT

The system predicts:

- Startup will be **Acquired**
- Startup may be **Closed**

Along with a success probability score.

9. USER INTERFACE

The user interface consists of:

- Home page
- Input form page
- Result page displaying prediction

10. TESTING

Functional Testing

Test Case	Expected Result	Status
Valid input	Prediction displayed	Pass
Invalid input	Error message shown	Pass
Multiple inputs	App works without crash	Pass

Performance Testing

Parameter	Result
Accuracy	84%
Response Time	< 1 second

11. KNOWN ISSUES

- Limited dataset features
- No real-time market data

12. FUTURE ENHANCEMENTS

- Add more business features
- Use advanced ML algorithms
- Deploy on cloud platform
- Add investor recommendation system

13. GITHUB REPOSITORY

https://github.com/bhargavisai20/startup-success-prediction/tree/main