Technology Stack Template

Prosperity Prognosticator: ML For Startup Success Prediction

1. Technology Stack Overview

Layer	Technology	Purpose	Version
Language	**Python**	**Core programming language for ML and backend**	**3.8+**
ML Framework	**Scikit-learn**	**Model training, evaluation, and tuning**	**1.0+**
Data Processing	**Pandas**	**Data loading, cleaning, transformation**	**1.3+**
Numerical Computation	**NumPy**	**Array operations and math functions**	**1.21+**
Visualization	**Matplotlib**	**Plotting charts and graphs**	**3.4+**
Visualization	**Seaborn**	**Statistical data visualization**	**0.11+**
Web Framework	**Flask**	**Backend routing and serving predictions**	**2.0+**
Frontend	**HTML5 / CSS3**	**User interface templates**	**Standard**
Model Serialization	**Pickle**	**Save and load trained ML model**	**Built-in**
Development Environment	**Jupyter Notebook**	**EDA, model building, experimentation**	**6.0+**
Dataset	**CSV (Kaggle)**	**Startup Success Prediction dataset**	**N/A**

2. Architecture Overview

The project follows a 3-tier architecture:

Tier	Component	Description
Data Tier	**startup_data.csv**	**Raw dataset containing startup features and success labels**
Logic Tier	**train_model.py / .ipynb**	**Data preprocessing, EDA, model training, evaluation, and saving**
Presentation Tier	**Flask + HTML Templates**	**Web app serving home, prediction form, and results pages**

3. ML Algorithms Used

Algorithm	Type	Use Case
Logistic Regression	**Classification**	**Baseline model comparison**
Decision Tree	**Classification**	**Interpretable rule-based prediction**
Random Forest	**Ensemble**	**Final selected model – best accuracy**
Gradient Boosting	**Ensemble**	**Performance comparison**
Support Vector Machine (SVM)	**Classification**	**High-dimensional feature handling**
K-Nearest Neighbors (KNN)	**Classification**	**Distance-based comparison**

4. Development Tools

Tool	Purpose
VS Code / PyCharm	**Code editing and debugging**
Jupyter Notebook	**Interactive ML development and EDA**
Terminal / Command Prompt	**Running Flask server and Python scripts**
Web Browser	**Testing the Flask web application**
Kaggle	**Dataset download source**