AI Project Risk Predictor

What it is

This is a smart Streamlit web app that predicts project delivery risk levels by combining:

- A machine learning model (Random Forest Classifier) trained on historical project data.
- Scalable feature preprocessing using StandardScaler.
- AI-powered recommendations generated via the Cohere API to provide improvement suggestions.

Key Components

Module: train_model.py
Purpose: Loads cleaned project data, trains the Random Forest Classifier, scales features, evaluates model performance, and saves the trained model, scaler, and feature names for deployment.

Module: app.py
Purpose: A Streamlit app with tabs for Manual Input, File Upload, and Analysis Dashboard. It loads the trained ML model and scaler, predicts project risk, visualizes risk factors, budget, and timeline, and integrates with Cohere for AI-powered recommendations.

Key Pipeline

- Data Preparation: Project data CSV is cleaned, unnecessary columns are dropped, and missing values are handled.
- Feature Scaling: Features are standardized to avoid bias.
- Model Training: RandomForestClassifier is trained, evaluated (accuracy, confusion matrix, classification report).
- Model Deployment: Artifacts are saved in a models folder (joblib files).
- App Execution: The app loads the trained model, scaler, and feature names, processes user input, predicts risk, and displays interactive dashboards.

Risk Prediction Logic

Input: 7 key features – complexity, overdue tasks, team size, success rate, duration, daily updates, and budget.
Output: Risk score as a percentage and category (Low, Medium, or High).
Visualization: Gauge chart, factor bar chart, timeline projection, and budget allocation pie chart.

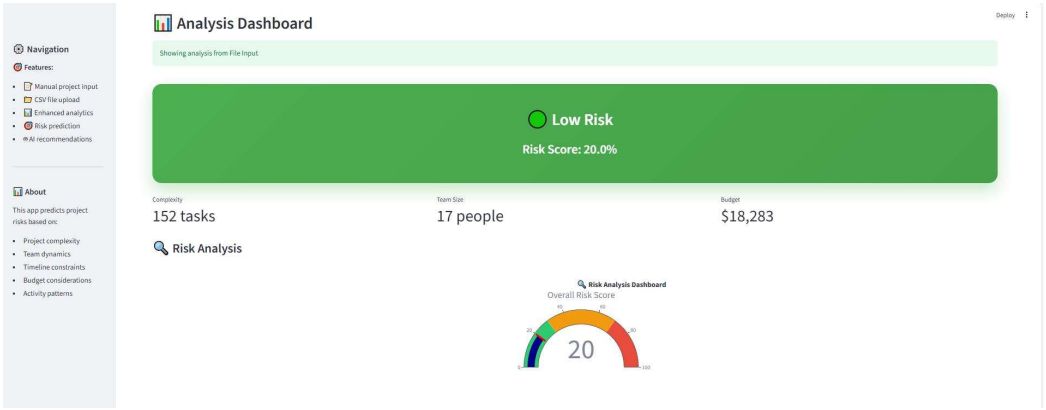

Fig 1- Analysis 01

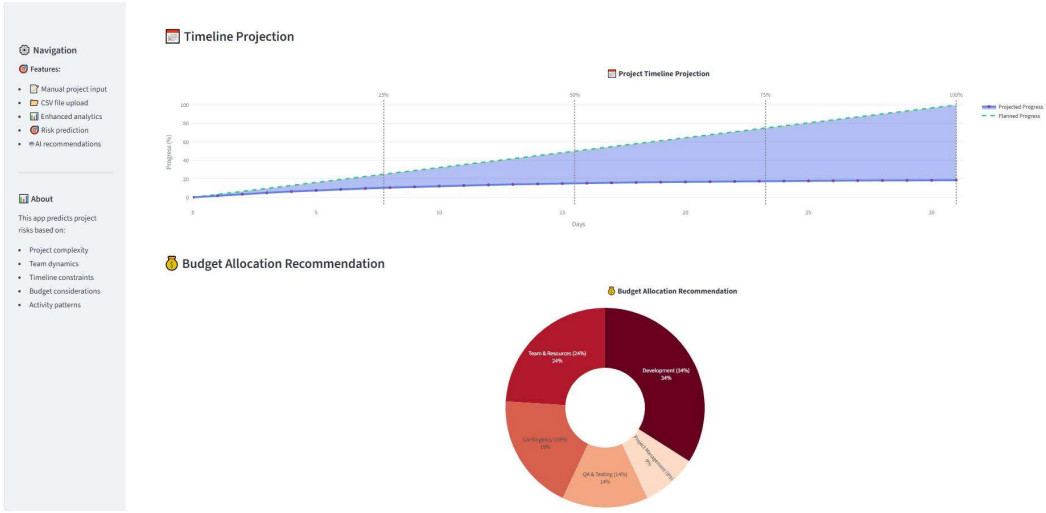

Fig 2- Analysis 02

AI Enhancements

Uses the Cohere API to generate five actionable project improvement suggestions based on the risk factors. Falls back to default suggestions if the API is not available.

How to Run

Train the model locally: python train_model.py

Start the app locally: streamlit run app.py