Green Finance Optimization Platform

Team Name: Ctrl + Alt + Del

Sudar Manikandan S – SHA25FF04008

Saroja P – SHA25FF08190

Bharanidharan S – SHA25FF08376

https://github.com/SUDAR2005/IndustryAI

WORKFLOW

a. Data Collection and Processing:

1. We planned to create a database considering sustainable projects listed in **World Resources Institute**.
2. The dataset consists of project details with **financial**, **environmental**, **social** and **governance** metrics to evaluate and analyze the sustainability, feasibility, and overall impact of green projects. (To view the metrics click here)
3. We have planned to use **MongoDB** for the storage and retrieve it through **API** with **async** and **retry mechanism** for improved efficiency.

b. Project Scoring and Analysis: (ESG)

1. **Environmental impact** is calculated from emission data, with **CatBoost (Categorical Boosting)** chosen for its ability to process sequential data and present it categorically for user clarity.
2. **Social Impact** is calculated using **Transformers** based models and **NLP** techniques to get insights in this matter
3. **Governance Scoring** is determined through a weighted method applied to various compliance metrics.

c. Optimization and Risk Prediction Engine:

1. **Optimization engine** aims to increases the ESG impact under constraints and risk tolerance using Linear Programming, Risk adjusted return calculations.
2. This can be done by using **PuLP(Linear Programming Modeler)** since it is an optimization problem.
3. **Risk Prediction** helps to identify earlier risk in the project from historical data using **Hybrid LSTM-Dense Network**.

d. **Dashboard**

React Framework based frontend with Project Overview Panel, Risk Analysis Dashboard and ESG Impact Visualizations.

01 Project Scoring System — Scores using CatBoost Transformers and NLP

02 Data Collection — Using project details in Worked Resources Institute

03 Risk Prediction — Hybrid LSTM - Dense Network

04 Optimization Engine — PuLP(Linear Programming Modeler)

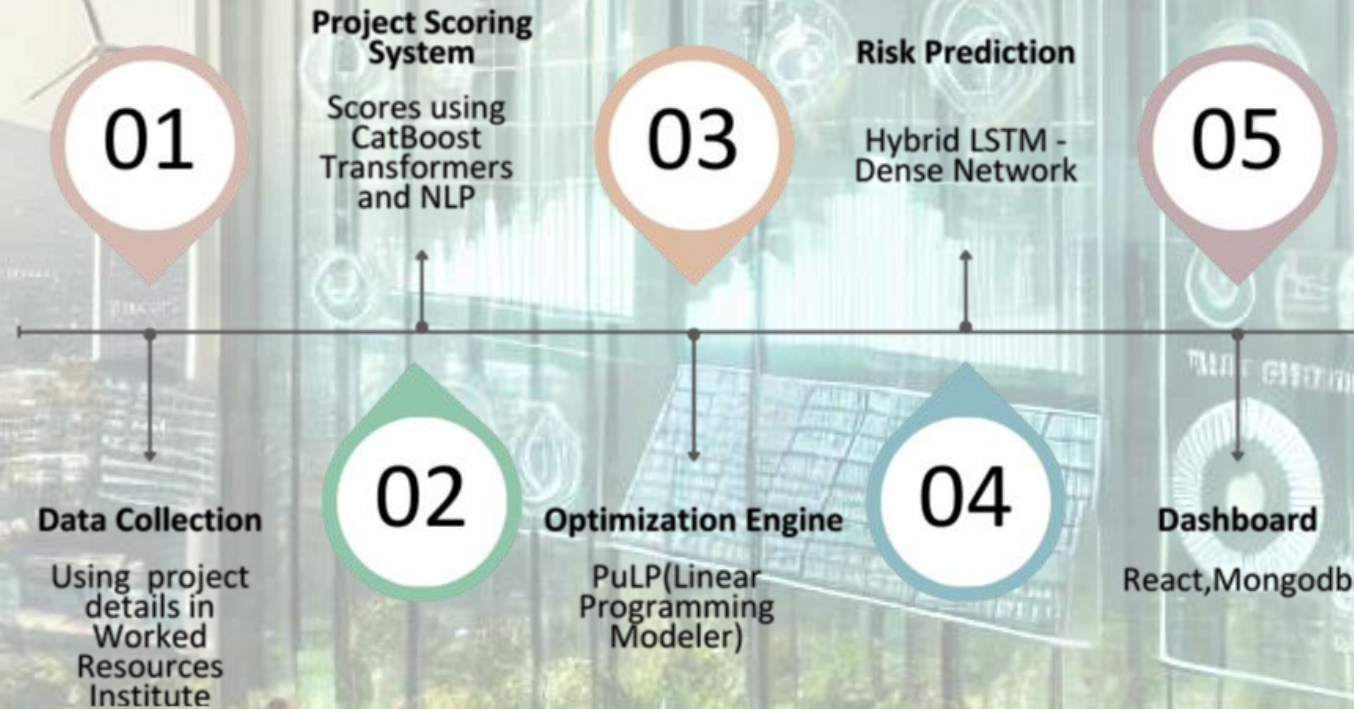**05 Dashboard** — React,Mongodb

Fig 1 Flow Diagram

Tech Stack

Tensorflow, Flask, MERN (MongoDB, Express, React JS and Node JS).