Project Initialization and Planning Phase

Date	28 July 2025
Project Title	Flight Delays Prediction Using Machine Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) report

The proposal aims to develop a flight delay prediction system using machine learning, improving airline operations, passenger experience, and airport management efficiency. It addresses challenges of unpredictability in flight schedules, enabling data-driven decisions, reducing delays, and improving resource planning. Key features include a machine learning-based prediction model integrated with real flight data.

Project Overview	
Objective	The primary objective is to predict flight delays using machine learning techniques, enabling proactive measures for airlines and improving passenger satisfaction through timely updates and operational efficiency.
Scope	The project focuses on analyzing historical flight data to train models for predicting delays. It supports airlines and airports in better planning, reduces operational bottlenecks, and enhances the overall travel experience for passengers.
Problem Statement	
Description	Unpredictable flight delays disrupt passenger schedules, strain airport operations, and reduce airline efficiency. Accurately predicting delays remains a challenge due to multiple interdependent factors like schedules, weather, and air traffic.
Impact	Addressing this problem leads to improved on-time performance, efficient resource allocation for airports, and better customer satisfaction by providing proactive delay communication and reducing frustration.
Proposed Solution	
Approach	Addressing this problem leads to improved on-time performance, efficient resource allocation for airports, and better customer

	satisfaction by providing proactive delay communication and reducing frustration.
Key Features	- Implementation of a machine learning-based flight delay prediction model. - Use of historical data for accurate forecasting. - Deployment of a user-friendly web app for real-time predictions.

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	Intel Core i7-10870H (8C/16T) CPU, NVIDIA RTX 3060 Ti (6 GB GDDR6 VRAM) GPU
Memory	RAM specifications	16 GB DDR4
Storage	Disk space for data, models, and logs	1 TB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, matplotlib, seaborn
Development Environment	IDE	Visual Studio Code
Data		
Data	Source, size, format	Kaggle dataset, 11,231 records, CSV