Instructions for Your Predictive and Optimization Techniques Project Proposal

As part of your project in this class, you are required to submit at most one-page proposals outlining your project idea. Your proposal should be clear and concise, covering the following key areas:

Detailed Problem Statement

> ➢ Define the problem you intend to solve.
> ➢ Explain the context and why this problem is significant or impactful.
> ➢ Be specific about what challenges you aim to address.

Example:
"The problem is predicting delays in flight arrivals for a major airline. Delays cause operational disruptions and customer dissatisfaction, costing millions annually. The goal is to build a system to predict delays and improve scheduling efficiency."

Objectives for Your Project

> ➢ Clearly list the goals of your project.
> ➢ State what you plan to achieve, including measurable outcomes.
> ➢ Link your objectives to the broader impact of solving the problem.

Example Objectives

1. Build a predictive model to forecast flight delays with at least 85% accuracy.
2. Identify the top contributing factors causing delays (e.g., weather conditions, aircraft maintenance).
3. Provide actionable insights for improving flight scheduling efficiency.

Type of Data and Size of the Data

> ➢ Describe the type of data you'll use (structured, unstructured, or semi-structured).
> ➢ Mention the size of the dataset and its key features.
> ➢ Indicate whether the data is publicly available or proprietary.

Example:

"The project will use a dataset of 100,000 flight records, including information such as departure times, arrival times, weather conditions, and flight durations. The dataset will be sourced from the U.S. Department of Transportation's flight database.

The Model/Models You Will Be Using

➢ Specify the predictive models and optimization techniques you plan to use.
➢ Justify your choice of model(s) by explaining their relevance to the problem.
➢ Consider alternatives or complementary methods for better results.

Example:

"A Logistic Regression model will be used to classify flights as delayed or on time. Additionally, a Gradient Boosting algorithm (XGBoost) will be implemented to improve prediction accuracy."