**Project Proposal**

**Title: Enhancing Hotel Management Decision-Making using AI-driven Guest Profiling**

**Targeted Problem:**

Hotel management struggles with the challenge of not knowing the past behaviour or specific needs of their guests upon check-in. This lack of knowledge can lead to issues such as:

* Assigning unsuitable rooms for guests with particular needs (e.g., health concerns or mobility issues).
* Unintended property damage due to guests' undisclosed habits (e.g., smoking, pets).
* Inability to predict and prepare for potential guest misconduct.
* Guest history & behaviour in past stays in other hotels.
* Guest dissatisfaction if he didn’t get the right room according to his comfort.

This project aims to mitigate these challenges by developing an AI model that leverages guest profiling, enhancing both the guest experience and operational efficiency.

**Research Questions:**

How can data collected from guests and hotel staff be used effectively to profile and predict guest behaviour and needs?

What impact can a guest profiling system have on the hotel’s operational efficiency and customer satisfaction levels?

How accurately can the proposed AI model forecast guest behaviours and requirements?

How could we connect the developed AI model to the hotel website?

How is the data stored?

How could you judge the guest's behaviour based on a few incidents ?

**Dataset:**

**Source:** The dataset will be compiled from two main sources: guest account creation (customer end) and front desk staff updates (hotel management end).

**Short Description:** The dataset will encompass a wide range of variables including guest health concerns, preferences, past behaviours in hotels (smoking, room damages, disturbances, etc.), and feedback from hotel staff about specific incidents.

**Size:** Anticipated size is approximately 150,000 entries over a pilot period of one year. (This is a speculative figure; actual size may vary depending on the data collection rate).

**Note:**

For this project we collect data from approximately 100 to 500 entries as a prototype model and when we get the expected outcome then we could feed more data to our AI algorithm.

**Motivation:**

**Technical Motivation:** With the integration of data science and AI in many industries, the hotel sector can benefit from predictive analytics to enhance decision-making processes. This project serves as a deep dive into the capabilities of AI-driven guest profiling, presenting a challenge in both data collection and model training.

**Personal Motivation:** Having personally experienced the repercussions of hotel management being uninformed about guest specifics, there's a genuine drive to solve this problem. It offers an opportunity to merge real-life challenges with technical knowledge, fostering an improved hospitality environment.

**Expected Outcomes and Benefits:**

Efficient Decision-making: Front desk personnel will be better equipped to make decisions about room assignments, anticipate potential issues, and ensure guest satisfaction.

Enhanced Guest Experience: By understanding guest needs and past behaviours, hotels can offer a more personalised experience.

Risk Mitigation: Predictive insights will help in minimising potential property damage and maintaining a comfortable environment for all guests.

Operational Efficiency: By reducing incidents of property damage and enhancing guest satisfaction, the hotel can see improved operational efficiency and potentially increased profits.