Project Guideline: Smart Irrigation

. **1. Project Idea:**

It could be related to SDGs, such as The goal of this project is to develop a smart irrigation system that optimizes water usage in agricultural fields using machine learning. The system will predict the precise amount of times needed for irrigation by analyzing various factors like soil moisture, weather conditions, and crop type, ensuring efficient water use and reducing waste.

2. Relevance to Sustainable Development Goals (SDGs):

This project directly contributes to SDG 6: Clean Water and Sanitation and SDG 13: Climate Action. By optimizing water usage in agriculture, the system helps in conserving water resources and promotes sustainable agricultural practices, which are crucial for climate resilience.

3. Literature Examples:

A smart irrigation system that leverages machine learning algorithms to optimize water usage in agriculture. The system predicts the irrigation needs of crops by analyzing various environmental factors such as soil moisture, weather conditions, and crop type. The implementation of this system demonstrated a significant reduction in water consumption, making it a promising solution for sustainable agriculture.

4. Describe Your Data:

The data will include soil moisture levels, weather, crop types, and historical irrigation data etc. It is an open dataset from kaggle. The data will primarily be in CSV format, with preprocessing steps to clean, normalize.

5. Approach (Machine Learning or Deep Learning):

A machine learning approach will be used due to the structured nature of the data and the need for interpretability.