



# VIT<sup>®</sup>

**Vellore Institute of Technology**

(Deemed to be University under section 3 of UGC Act, 1956)

**School of Computer Science and Engineering**

**Fall Semester 2024 - 2025**

**Digital Assignment-2**

**Technical Answers for Real World Problems (TARP)**

**Course code: CBS1901**

**Class number: VL2024250507368**

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## Introduction:

Traditional irrigation methods often lead to inefficient water use due to a lack of real-time adaptability to environmental changes. Present-day intelligent irrigation systems apply irrigation without taking specific differences into account, treating entire farms as uniform regions. This study suggests a system that makes use of machine learning algorithms to forecast rainfall and measure soil moisture levels in order to overcome this inefficiency and provide targeted water distribution. IoT sensors will be connected to the system to gather information on temperature, humidity, and soil moisture. In order to estimate rainfall and identify the precise areas of the farm that need irrigation, machine learning algorithms will analyse this data in combination with meteorological forecasts. An automated water valve control system will effectively manage water distribution based on these insights, minimising water wastage and improving crop health.

In addition to saving water, this method supports climate-resilient and sustainable farming methods.

In order to optimise water use and ensure effective crop irrigation management, this project intends to create a sustainable model that can be implemented in a variety of agricultural contexts by concentrating on machine learning-based predictions and automation.