Project Design Phase-II
Technology Stack (Architecture & Stack)

Team ID	PNT2022TMID28739
Project Name	Emerging methods for early detection of forest fire
Maximum Marks	4 Marks

Technical Architecture:

Data

Collects data from the sensors

IBM Cloud

Forest fire detection model

Train the model on IBM watson

Video frames

Cameras used in the forest and drones

Indicates the fire through alarm

Sends an message Through API

Table- 1 : Components & Technologies:

S. No	Component	Description	Technology
1.	Sensors	The user deploys the sensors in the forest to collect real time data	Temperature sensors, Heat detectors, Smoke sensors are used.
2.	Surveillance video camera	Cameras are fixed at an fixed distance in the forest	Infra red cameras are used.
3.	Drones	Drones can be used to monitor abandoned areas	Thermal cameras are fixed in drones which can controlled by humans.
4.	Video conversion	Videos can be converted into several frames	Video frame converter.
5.	Data collection	Sensor data can be collected by using the microcontroller	Altera, Atmel etc.
6.	Dataset	The dataset can be used for training and testing the model.	Dataset is stored in the cloud.
7.	Cloud database	The model is trained in the cloud more precise with detections more images can be added later on.	IBM Cloudant ,Python Flask.

8.	Infrastructure (Server /	Application Deployment on Local	Java/python ,React.Js
	Cloud), API	System / Cloud Local ,Cloud Server Configuration to send messages	,JavaScript ,HTML ,CSS ,IBM Cloud ,OPEN CV ,Anaconda Navigator ,Local.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Fire alarm system	The purpose of alarm is to inform the fire.	Alarm can be deployed in forest offices.

Table-2: Application Characteristics:

S. No	**Characteristics**	**Description**	**Technology**
1.	Open-Source Frameworks	Python Flask framework is used	Technology of Open source framework
2.	Security Implementations	Mandatory Access Control (MAC) and Preventative Security Control is used	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	High scalability with 3-tier architecture	Technology used

4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Web server – HTML ,CSS ,JavaScript Application server – Python , Anaconda Database server –IBM DB2
5.	Performance	Enhance the performance by using IBM CDN	IBM Content Delivery Network