

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

Date	13 October 2022
Team ID	PNT2022TMID25532
Project Name	Emerging Methods for Early Detection of Forest Fires
Maximum Marks	4 Marks

Technology Stack

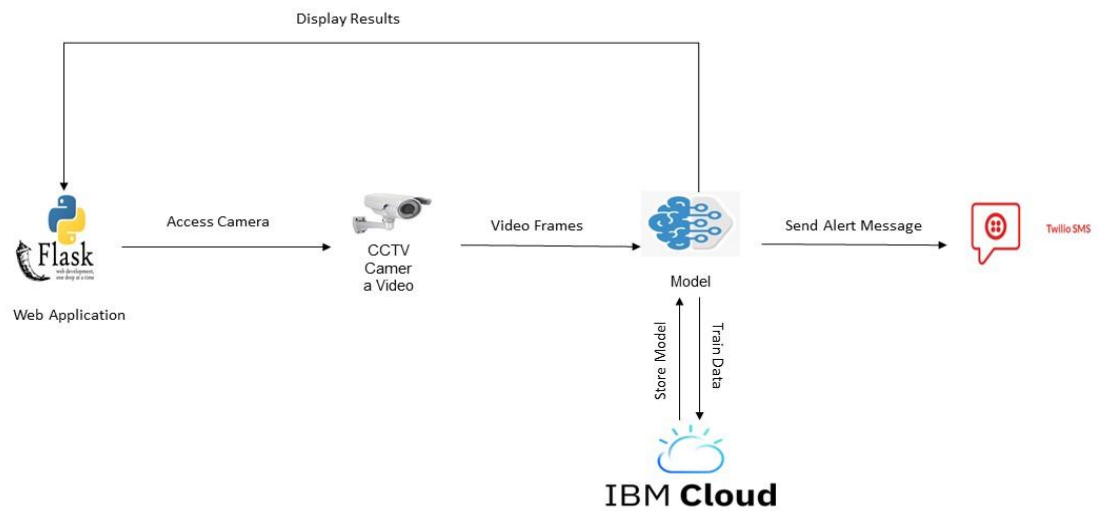


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	The user interacts with the web UI application.	HTML, Python flask,CSS,etc
2.	Application Logic-1	Getting the video feed of forest places.	Python.
3.	Application Logic-2	Predicting whether the fire is detected or not.	IBM Watson Studio and Watson machine learning
4.	Application Logic-3	Alerting the forest fire officials (users)	Python flask, IBM Watson
5.	Database	Datatype – The images and user input details are stored. The details of the location and timing of the detection of fires are stored in a database for future reference.	MySQL, Js, and IBM DB2
6.	Cloud Database	Database Service on	IBM DB2, IBM

		Cloud	Cloudant, etc.
7.	File Storage	The received user to input details and images are stored in the cloud.	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	API is used to predict the probability of fire at a particular season using weather data.	IBM Weather API, etc.
9.	External API-2	API to send message to users when a fire is detected	Twilio service API
10.	Machine Learning Model	The Machine Learning Model collects the video frames and processes the image to find if the fire is present or not.	Convolutional neural network(CNN) model using python TensorFlow library for fire detection.
11.	Infrastructure (Server / Cloud)	On the cloud server we will be deploying the AI model using flask on the webpage.	Python flask, IBM cloud

Table-1: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python Flask framework is used	Technology of Opensource 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	Web server – HTML, CSS, JavaScript Application server – Python, Anaconda Database server –IBM DB2
4.	Availability	Use of load balancing to distribute traffic across servers	IBM load balancer
5.	Performance	Enhance the performance by using IBM CDN	IBM Content Delivery Network