

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

Date	05 November 2022
Team ID	PNT2022TMID54434
Project Name	Emerging Methods for Early Detection of Forest Fires
Maximum Marks	4 Marks

Technical Architecture:

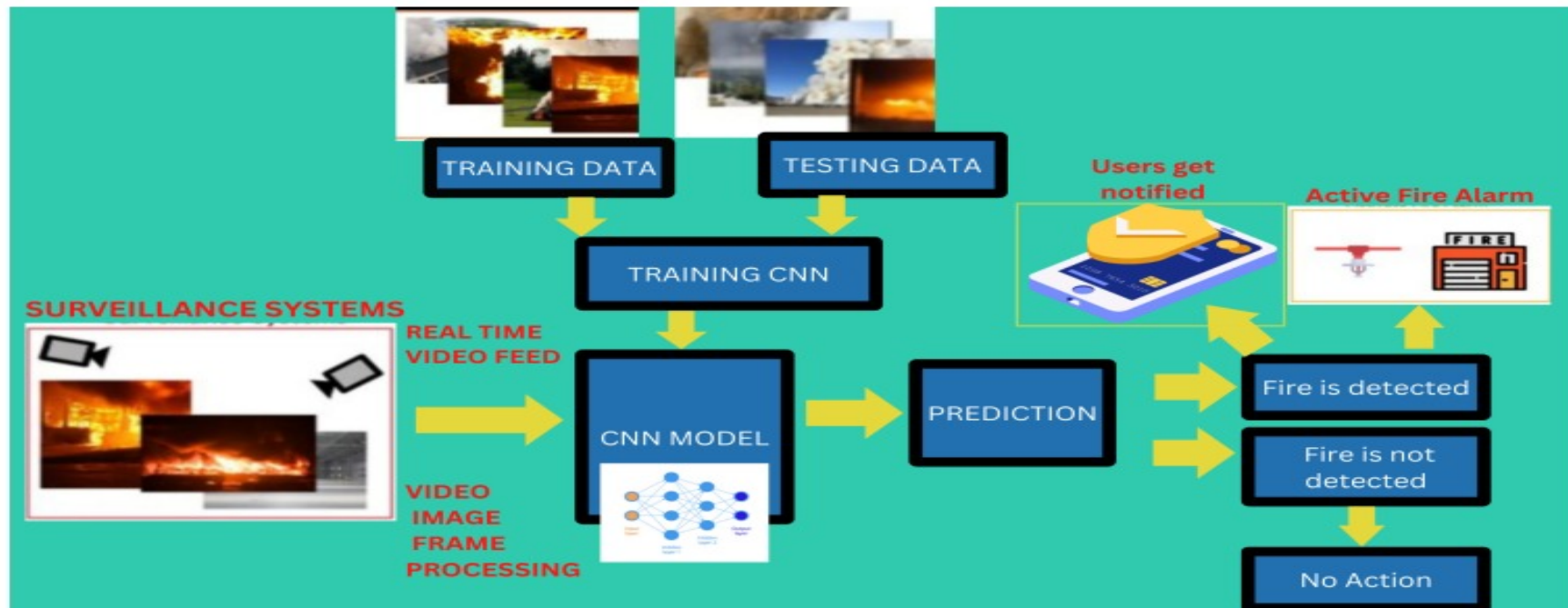


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How the user interacts with the application: Mobile App	Java, XML, React Js
2.	Input	Video feeds	Feed cameras, UAVs
3.	Application Logic-1	Data collected by feed camera converted to frames	Python, OpenCV
4.	Application Logic-2	Creating a model using deep learning for training and testing the dataset	CNN (using libraries such as Tensorflow and Keras)
5.	Application Logic-3	Video Analysis (Video Preprocessing)	Computer Vision (OpenCV)
6.	Database	CSV format (Test and Training)	Labelled dataset from Kaggle
7.	Cloud Database	Database Service on Cloud	IBM Cloud
8.	File Storage	File storage requirements	Local Filesystem
9.	External API-1	To send alert messages to users	Twilio API, etc.
10.	Machine Learning Model	To train the model to detect forest fires from video and image data	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration	IBM Cloud

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Video Analysis, Web app framework	OpenCV, Python Flask
2.	Security Implementations	Database and system are backed up by the cloud and thus secured	Encryptions, IAM Controls

S.No	Characteristics	Description	Technology
3.	Scalable Architecture	3 – tier	Python Flask
4.	Availability	Use of load balancers, distributed servers	IBM Cloud
5.	Performance	Train and test the number of requests per sec in real time using the model	Online deployment to IBM Cloud