

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

Date	23 October 2022
Team ID	PNT2022TMID10687
Project Name	Emerging methods for early detection project fire
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

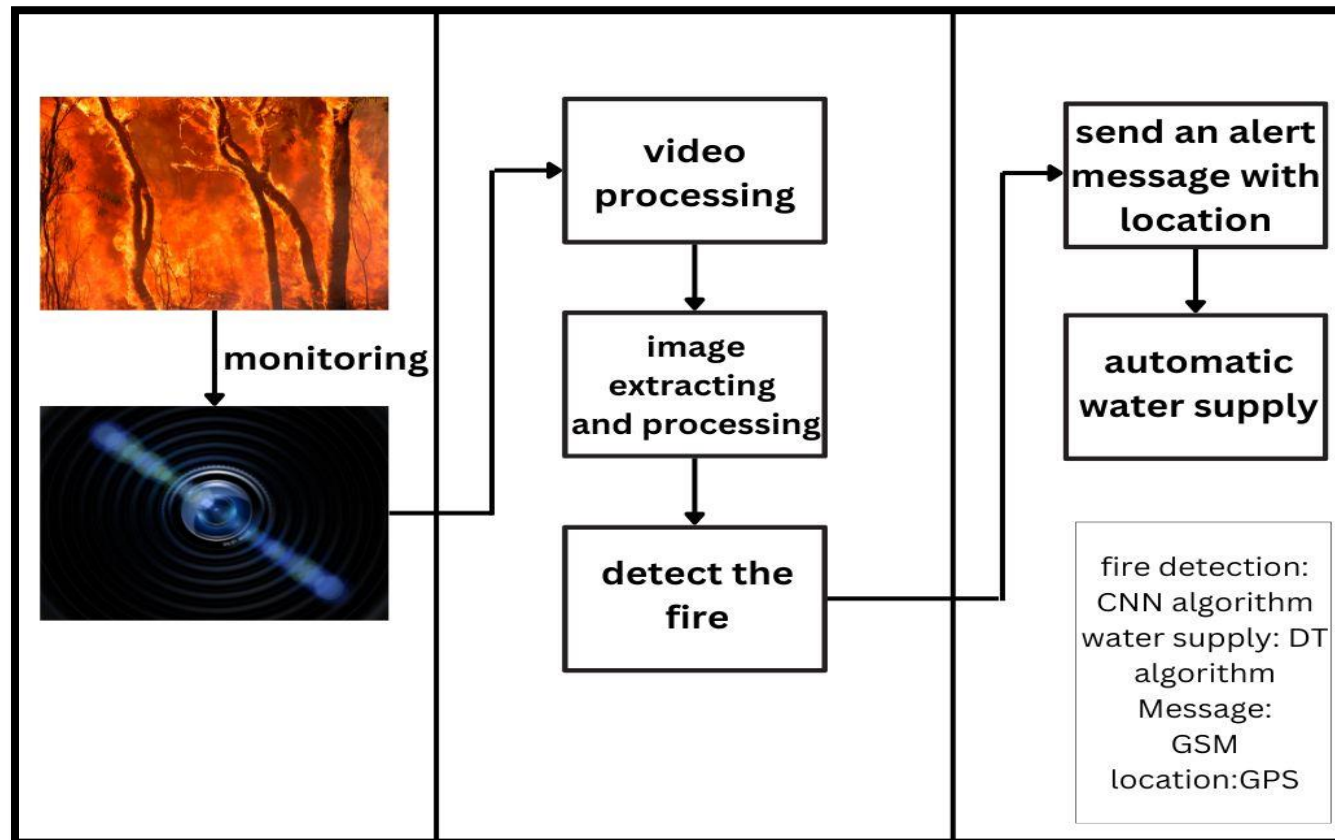


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI, GPS, GSM.	HTML, CSS, JavaScript
2.	Application Logic-1	Detect fire using live streaming video	Python
3.	Application Logic-2	Train the model using CNN algorithm	IBM Watson STT service
4.	Application Logic-3	Train the model for automatic water using DT algorithm	IBM Watson Assistant
5.	Database	Video, image	MySQL, SQL Server.
6.	Cloud Database	Database Service on Cloud	IBM DB2
7.	File Storage	Jupyter notebook (Python files), dataset	Local Filesystem
8.	External API-1	Used to send alert message to the ground station	IBM API
9.	External API-2	Send the location to the fire station	GPS
10.	Machine Learning Model	To detect the fire in the forest using CNN model	Video processing model

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Keras, matplotlib, cv2	Keras: It also allows use of distributed training of deep-learning models on clusters of Graphics processing units (GPU) and tensor processing units (TPU). Matplotlib: creating static, animated, and interactive visualizations in Python CV2: OpenCV has a function to read video
2.	Security Implementations	Security monitoring	Security monitoring is the automated process of collecting and analysing indicators of potential security threats, then triaging these threats with appropriate action.
3.	Scalable Architecture	CNN, DT algorithm, GPS, GSM	CNN: input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other. DT: predicts the value of a target variable GPS: detect location GSM: is a digital mobile network that is widely used by mobile phone
4.	Performance	Lookout station	Monitor the fire and automatic water supply to the burning areas