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

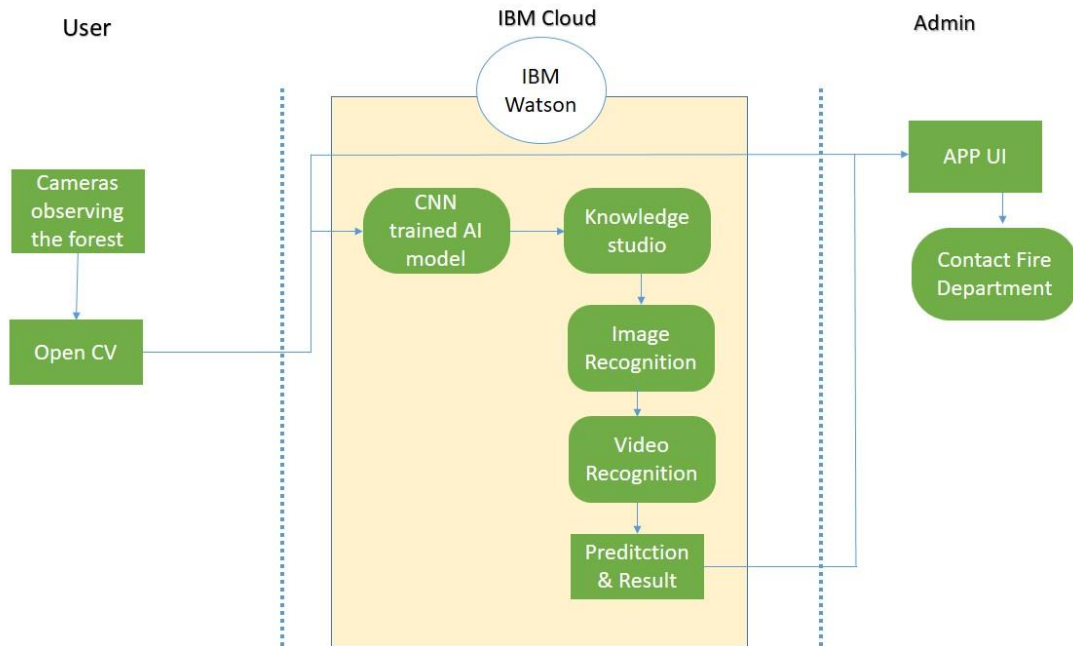| Date	09-November-2022
Team ID	PNT2022TMID04190
Project Name	Project – EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES
Maximum Marks	4-marks

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Helps the user to interact with the application and to observe the videos	HMTL, CSS, JavaScript, Python-Flask, Angular
2.	Training a Model	To train a model to find if there is any fire or not	Python (Tensorflow, Pandas, Scipy)
3.	Computer Vision	Helps the cameras to understand and process images and videos	Open CV, YOLOv3
4.	Database	To have a small dataset for further training and testing of the model	MySQL,

5.	Cloud Database	Database Services on Cloud for AI model to train and predict	IBM DB2
6.	Mobile number security verification	To verify that the user is an authorized person who can access these information	GSM Module, WebOTP API

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Open-Source frameworks used in building a model, training them, implementing them in real-time, computer vision and neural networks.	Python (Tensorflow, Keras, Pandas, Pytorch, Numpy, MatPlotlib, Scipy), Open CV, Open Vino.
2.	Security Implementations	The surveillance camera in forests pose a security threat as they are very sensitive data which in the wrong hand can be able to monitor and manipulate them.	AES Encryptions, Two-Factor Authentication, OTP confirmation
3.	Scalable Architecture	The project can be scaled into large acres of forests as they are much easier to scale in its size. The only consideration would be the size of the cloud server and the availability of cameras	IBM Cloud
4.	Availability	This can be accessed by officials all around the globe as they are live-streamed in IBM Cloud Server through internet. So officials can access through the UI portal using their credentials.	IBM Cloud Server, WebOTP API,
5.	Performance	The performance of this project can be increased overtime as we are using Convoluted Neural Networks with Deep Learning techniques so the accuracy increases over-time. The performance can also be increased when the Cloud server's physical memory increases.	Support Vector Machine, Recurrent Neural Networks, Naïve-Bayer Classifier, Restricted Boltzmann machine, IBM Cloud