Project Design Phase-I
Proposed Solution Template

Date	25 October 2022
Team ID	PNT2022TMID08252
Project Name	Emerging methods for early detection of forest fires.
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Forest fires are a major environmental issue, creating economic and ecological damage while endangering human lives. Unplanned and abrupt forest fires are a major cause of degradation. The forest fire must be detected at an early stage so that the authorities can prevent the spread.
2.	Idea / Solution description	Our solution aims at collecting a vast range of dataset to test and train the model regularly using CNN where the system can detect immediately if any ignition of fire is found. Then, the Cloudant DB is brought to use where the large amount of data is stored and fetched which acts as a server. Open CV acts as a tool for the processing the videos that are captured. Bosch BME688 sensor is used in order to re-confirm the fire. Twilio API is used to alert the authorities when the fire is detected.
3.	Novelty / Uniqueness	Existing system uses Bosch BME688 sensor, which is the first gas sensor that detects the gases such as carbon monoxide, hydrogen emitted during the early stages of forest fire. Our proposed system is based on AI technology which uses web cameras to make it easier for the authorities. Accuracy and timely prediction are achieved using this system.

4.	Social Impact / Customer Satisfaction	Forest fires are dangerous for the existence of life as they include wild life and natural resources which gives life to various living bodies. Social awareness should be brought to the people regarding saving wild life and forest from dangerous forest fires. The proposed solution meets the customer satisfaction needs
		as it provides immediate alerts as soon as any fire is spotted which helps the authorities to take actions sooner.
5.	Business Model (Revenue Model)	A working model which consists of a web camera that can monitor continuously the forest area and a working trained model which can automatically show up if any spark, fire or smoke is detected. The model has to be trained widely using large datasets which can be fed into databases and feedbacks can be retrieved. Thus, video processing is the main motive for detection of forest fires, then the authorities should be present to monitor the live video and to get ready to prevent fire from further extension if any alert is produced from the trained model. Thus, this proposed model can be implanted at fire-prone area to provide quick responses and practice prevention methods.
6.	Scalability of the Solution	The device should be compatible with a minimum of 4GB RAM to support usage of various software like Anaconda Navigator for python and data science. Testing and training undergo using latest technology like Tensor Flow and Keras. **T**he data generated by the web camera have to processed by Open CV and further it should be connected with an alerting system.