Project Design Phase-I
Proposed Solution Template

Team ID	PNT2022TMID33183
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 an integral part of many terrestrial ecosystems. Every year, thousands of forest fire across the globe cause disasters beyond measure and description. • Forest fire prediction, prevention and management measures have become increasingly important.
2.	Idea / Solution description	• The computer vision methods for recognition and detection of smoke and fire, based on the still images or the video input from the cameras. Deep learning method "convolution neural network" can be used for finding the amount of fire. • Enabling the video surveillance systems on forest to handle more complex situations in real world. • Accuracy for detection of fire can be given based on the algorithm which we are going to use and the datasets and splitting them into train set and test set.
3.	Novelty / Uniqueness	• Using the algorithm like CNN, the pre-processing required in a ConvNet is much lower as compared to other classification algorithms. • Parameters such as temperature, gas concentrations, soil humidity etc. are monitored with sensors while background sounds are analysed.
4.	Social Impact / Customer Satisfaction	• The customer will not be informed with a false alarm. To avoid the

		instances of false alarms being triggered, a threshold for the classifier confidence was set. Hence, the alarm is only triggered when the confidence is greater or equal to the threshold. • The flame detection frameworks can be intelligently tuned for detection of fire. This will enable the video surveillance systems on forest to handle more complex situations in real world.
5.	Business Model (Revenue Model)	• Finally built fire detection unit becomes inevitable to use a test dataset that includes images that are often encountered in real-world fire emergencies with an image quality that is commonly obtained with a camera attached to low-cost hardware like Arduino Uno, a microcontroller. • It will be very useful for the customers who are buying as well as the manufacturers.
6.	Scalability of the Solution	• Many fire risk models make use of forest fire databases to construct and assess probabilistic models. • It is an effective way to minimize the damages caused by the forest fires is the early detection of forest fires and a fast appropriate reaction. • As a scalable model, in the future, it is vital to study the temporal and spatial distributions of forest microclimate related factors in-depth, analyse the law of coordinated changes and combine microclimate factors in the model simulation and training processes.