PROJECT OBJECTIVES

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Team ID	PNT2022TMID32061
Project Name	Emerging Methods for Early Detection of Forest Fires
Team Leader	Ashok R
Team Mates	Kabish S,Krithick Sanjay,Brethika R.D
Maximum Marks.	4 Marks

PROJECT OBJECTIVES :

Recent advancements in technology have overwhelmingly shaped society, the economy, and the environment. With the help of the various state-of-art technologies such as IoT, blockchain, AI, geospatial mapping, and so on, leading to the fifth industrial revolution, which focuses more on solving climate goals in line with the revolution [1]. New requirements in the ecological environment arise due to the expeditious development of society. Among the various natural disasters, fire hazard seems to own the characteristics of spreading, and also, it becomes very challenging to control, and thus, it results in heavy destruction that might be irrevocable [2–4]. Over the past few years, there is a tremendous increase in the count, occurrence, and severity of wildfires across the world that has created a great impact on the economy and ecosystem of the country. There are various techniques such as watchtowers, spotter planes, infrared, aerial patrols, and automatic detection systems to detect fire events [1]. There is no need for the exposure of humans to perilous activities when remote sensing is deployed [5]. Various techniques are as follows:

(i)Usage of the satellite images to observe, detect, and report fire events.
(ii)Implementation of the wireless sensor networks to observe the fire events exist in all areas.

Yet there are certain limitations associated with the satellite images [6–8]. It has an inadequate resolution, and hence, the data pertinent to the corresponding area would be taken as an average, and it is restricted to a particular pixel that results in the detection of small fires. The predominant limitation is that the satellites cover only a limited area and require a preprocessing time before the resurvey of the same region. The other limitations such as the shortage of real-time data and inadequate precision are inapt for persistent monitoring. There is a need for the infrastructure in advance if WSNs are deployed [4]. There is more chance for the destruction of the sensors during the fire, and this might lead to more expensive restoration of the sensors [9]. Several factors such as the static nature of the sensors, their coverage, difficulty in maintenance, the deficit in power independence, and nonscalability are the reasons for the sensor networks to limit their efficiency. Therefore, unmanned aerial vehicles (UAVs) are proposed to overcome the limitations. The sovereignty, less cost, autonomous, and flexibility make the UAV technology the best choice for fire management efforts in the wildland. There are

researchers who put more effort into focusing on the development of frameworks and techniques that could be associated with UAVs. The motive of the implementation of UAV is to detect the fire and its coverage in an optimal manner [3, 10]. The aim of this work is to develop a model to detect the fire and its coverage area, and in addition, it also observes the fire in the low region. Section 2 describes the related works associated with fire detection. Section 3 elaborates on the proposed model and architecture. Finally, the results and discussion to prove the proposed model are covered in Section 4. The last section concludes with a summary and future scope.