Ideation Phase
Literature survey

Date	27/09/ 2022
Team ID	PNT2022TMID52907
Project Name	Emerging methods for early detection of Forest Fire

PAPER TITLE	AUTHORS	THEIR WORK	ADVANTAGES	DISADVANTAGES
Early Detection of Forest Fire Using Mixed Learning Techniques and UAV	Varanasi LVSKB Kasyap, D.Sumathi,Kumarraju Alluri, Pradeep Reddy CH, Navod Thilakarathne and R. Mahammad Shafi	Proposed a deep learning solution for forest fire detection using mixed learning technique composed of YOLOv4 tiny and LiDAR techniques. Unmanned aerial vehicles (UAVs) are used to patrol the forest.	The proposed model deployed on an onboard UAV has achieved 1.24 seconds of classification time with an accuracy of 91% and an F1 score of 0.91. The onboard CPU is able to make a 3D model of the forest region and can transmit the data in real time to the ground station. The proposed model is trained on both dense and rainforests in detecting and predicting the chances of fire.	No practical detection. Necessity of Early Detection is not met. This model is sensitive to the forest with dense fogs and clouds.

Image Processing Based Forest Fire Detection using Infrared Camera	Norsuzila Ya'acob, Mohammad Syamirza Mohd Najib, Noraisyah Tajudin, Azita Laily Yusof and Murizah Kassim	The proposed project captures infrared image of forest fire using the appropriate camera, detects fire with RGB and YCbCr colour model to isolate fire pixels from the background and separate luminance and chrominance from the original image, and filter image using MATLAB Analyzer to process images.	Enables fire detection at night, because of the usage of IR Cameras.	As the cameras are stationary and needs to be placed at specific positions, they are proven to damage, wrong detection.

A Review on Early Forest Fire Detection Systems Using Optical Remote Sensing	Panagiotis Barmpoutis, Periklis Papaioannou, Kosmas Dimitropoulos and Nikos Grammalidis	This paper focuses on those that use optical remote sensing, as well as digital image processing and classification techniques. These systems are equipped with visible, IR, or multispectral sensors whose data are processed by machine learning methods. The computer-based methods can process a high number of data aiming to achieve a consistent level of accuracy maintaining a low false alarm rate.	Aerial-based systems gained recently a lot of attention due to the rapid development of UAV technology. Such systems provide a broader and more accurate perception of the fire, even in regions that are inaccessible or considered too dangerous for fire-fighting crews.	Affected by weather conditions and in many conditions their flight time is limited.

Our proposed idea will enable Early Detection, differentiation between smoke and fog. Usage of Drone or UAVs in pour solution will prevent camera damage, wrong detection.