Literature Survey On Emerging Methods for Early Detection of Forest Fires

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S.NO:	TITLE OF THE PAPER	OBJECTIVES	METHODOLOGY USED	CRITICAL ANALYSIS
1.	Early Forest Fire Detection using Drones and Artificial Intelligence. (2019)	To detect forest fires early, the proper categorization of fire and fast response from the firefighting departments.	**ALGORITHMS FOLLOWED:** The fire detection is based on a platform that uses Unmanned Aerial Vehicles(UAVs) which constantly patrol over potentially threatened by fire areas. The UAVs utilize the benefits from Artificial Intelligence (AI). **TOOLS USED** : This allows to use computer vision methods for recognition and detection of smoke or fire, based on images or video input from the drone cameras.	**ADVANTAGES:** From this journal, we use drone cameras and UAVs, because it patrols the forest always. **DISADVANTAGES:** Burn and damage vegetation communities, it causes erosion and subsequent sedimentation of creeks and wetlands. **FUTURE ENHANCEMENT:** Integrate live satellite data and process realtime processing of the fire. Enhance the time complexity of the detection of fires to improve the speed.
2.	A review on early forest fire detection system using optical remote sensing,(2020)	To fight forest fires occurring throughout the year with an increasing intensity in the summer and autumn periods.	Detection methods that use optical sensors or RGB cameras combine features that are related to the physical properties of flame and smoke, such as color, motion, spectral, spatial, temporal, and texture characteristics.	From this journal, we use modern optical sensor networks which are known for their long range communication capabilities and extremely suitable for sensor and telemetry applications.

3.	Developing a real-time and automatic early warning system for forest fire. (2018) IEEE	To detect forest firescausing by climatic conditions and also caused by human.	The method using here is making use of stand-alone boxes which are deployed throughout the forest. Those boxes contain different sensors and a radio module to transmit data received from these sensors. Each sensor will be tested in individually and XBee modules are configured and paired using XCTU Software.	From this journal, we use Software solutions which are used for implementing microcontroller kits and to simulate and designing circuit boards.
4.	Early Fire Detection System using wireless sensor networks. (2018) IEEE	To detect fires from huge cause of forests.	The hierarchical architecture of Wireless Sensor Networks is most efficient and extensible for dense networks which simplifies the management of the forest as well as the communication and the localization of fire and sensors.	From this journal, we use cluster heads as landmark for the rest of sensor for localization in order to define their GPS coordinates according to the cluster head's coordinate.

| 5. | Automatic Early Forest fire Detection based Gaussian Mixture Model. (2018) IEEE | To avoid the hugedamage of forest caused by fires. | Based on the slow spread of smoke, firstly a time delay parameter improves Gaussian mixture model for extracting candidate smoke regions. Then, two motion features of smoke, the rate of area change and motion style are used to select smoke regions from the candidate regions. | From this journal, we use Gaussian mixture model. Because it can reconstruct background with the advantages of small storage space, adaptive learning and good noise toleration. |

Reference:

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