Emerging Methods for Early Detection of Forest Fires

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Abstract

Forest is one of the major wealth of our country. Forests provide enormous material goods and environmental services. They are useful for industry as well as rural economic growth. Forests provide timber, resins, rubber, food items, medicines etc. So the forest fire has to be detected at earlier stage.The various real-time forest fire detection and prediction approaches, with the goal of informing the local fire authorities are already existing but there exist many disadvantages along with it, our project is to rectify those drawbacks using AI technology

Literature Survey

S.no	Author	Description	Technology
1.	Surapong Surit, Watchara Chatwiriya	The proposed method is composed of following steps, the first is to detect the area of change in the current input frame in comparison with the background image, the second step is to locate regions of interest (ROIs) by connected component algorithm, the area of ROI is calculated by convex hull algorithm and segments the area of change from image, the third step is to calculate static and dynamic characteristics.	This approach is based on digital image processing approach with static and dynamic characteristic analysis.

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2.	Osman Gunay and Habiboglu	Spatio-temporal Covariance Matrix is used in this system which divides the video data into temporal blocks and computes covariance features. The fire is detected using this feature. SVM Classifier is used to filer fire and fire-like regions. This system supports only for clear data not for blur data.	System based on Covariance Descriptors,Color Models,
3.	Hamed Adab	The indexing may be structural fire index, Fire risk index, Hybrid fire index. Depending on the geographical condition of the area the indexing differs. Validations of indices are based on hot spot data.	Indexing, GIS techniques and remote sensing
4.	Akshata & Bhosale	Pixel level analysis is required in this method. This method uses YCbCr color model to detect fire. Detection is based on three phase. The first phase involves segmentation of image using LBP. LBP is a texture operator whose value is computed using image's center and neighboring pixel values.	Local Binary Pattern and Wavelet Decomposition is used to detect fire

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5.	Paulo Vinicius Koerich Borges	Computer vision based approach is used in this approach. Though this approach is used surveillance it is also used to automatic video classification for retrieval of fire catastrophes in databases of newscast content.	probabilistic method and classification
6.	Dimitropoulos	Initially,background subtraction and color analysis is used to define candidate fire regions in a frame and this approach is a non-parametric model. Following this, the fire behavior is modeled by employing various Spatio-temporal features	Linear Dynamical Systems, Histogram and Mediods.
7.	Zhanqing	In this method the NN not only classify the smoke, sky, background but also generates a continuous random output representing mixture of these. NN consumes time in case of large areas so multi-threshold algorithm also used as well.	NN and Multi-threshold algorithm