Literature survey

Dr. S. Deepa and Mr. Arun Francis proposed this method and a definition of fire detection. For early fire detection, we use smoke, which is a good indicator of fire visible in front of flames. Smoke properties such as: Transparency, response to environmental conditions, its shape. Smoke detection is a serious challenge in open environments, and sensors can be used in such locations, but this has limitations such as time and wide coverage. To overcome this, video fire alarm systems are used.

Dr. S. Deepa and Dr. Sobana proposed a method based on wavelet and smoke color models. The proposed method exploits two features of his,energy variation in the wavelet model and smoke color model. Smoke is detected based on the reduction in the wavelet domain energy ratio between the background and the stream. The color deviation of the current pixel is measured by the color model. Combine these two features to detect smoke using a Bayesian classifier.

Mr. Arun Francis and Dr. Sobana proposed a paper based on an infrared sensor scheme. Based on thermal image processing, this method instantly detects each fire in the forest and determines the presence or absence of fire. Sensor network is ubiquitous and helps human capabilities monitor large areas of the forest. This work describes a scheme for automated forest monitoring using IR sensors. This paper only describes detecting firesand using image processing to send images of detected fires

Dr. S, Deepa, Mr. Arun Francis and Dr. Sobana propose a paper on a forest monitoring system using sensors, wireless communication and image processing. Forest monitoring systems track conditions favorable to forest fauna, collecting data such astemperature, humidity, animal entry and exit, and different parts of the forest.

Mr. Arun Francis used the HSI color model to isolate the fire pixels. They developed rules for light and dark environments. After segmenting the fire regions based on
the HSI rule, pixels with low intensity and saturation are removed to avoid fire aliasing (fire-like regions). They also formed a metric based on binary counter difference images to measure the degree of flame burn for fires such as no fire, small fire, medium fire, and high fire. The results contain false positives and false negatives. However, there is no way to change the threshold to reduce false positives and false negatives.

Dr. Sobana proposed a methodology combining an optical camera with feature extraction (moving pixel/region extraction, color-based segmentation, and wavelet analysis in temporal and spatial domains) followed by a vote-based classifier.

Dr.S.Deepa proposed an algorithm that uses a computer vision approach to fire flame detection to detect fires at an early stage. First, we use background subtraction and color analysis to define possible firing regions in the frame. This approach is the non- parametric model. We then model fire behavior using various spatio-temporal features such as color probability, flicker, and spatial and spatio-temporal energies. After flame modeling, dynamic texture analysis is applied to each candidate region using linear dynamic systems, histograms, and media. LDS is used to increase algorithm robustness by analyzing the temporal evolution of pixel intensities. Preprocessing is then performed to exclude non-candidate regions. A spatio-temporal analysis is performed to increase the reliability of the algorithm. Determine the presence of fire in adjacent blocks from the current and previous video frames by estimating the coherence of each candidate fire region. Finally, a two-class SVM classifier is used to classify the fire andnon-fire areas.

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