

AI BASED WILDFIRE PREDICTION

Abstract:

AI is a powerful decision making tool which makes use of decision maker to do intensive prediction and association tasks. Forest fire predictor plays a vital role for forest fire management. Timely prediction reduces the number of areas affected by this fire and thereby minimizes the cost of fire extinguishing and the damage caused in the Forest. This project presents an forest fire prediction mechanism based on Artificial Intelligence. The major challenge of an prediction system is that how to combine the different indicators in order to make a decision and to predict large number of unseen patterns from few known ones. The prediction must be accurate, consistent and computationally effective. Here we make use of novel forest fire risk prediction algorithm, which is based on Logistic regression. The algorithm works based on previous weather conditions in order to predict the fire hazard level of day. The data mining principle used is “Junk in Junk out” accurate weather prediction. Most of the prediction mechanisms bases its prediction on a continuous observation of a number of considerable factors. The aim of project is reduce the number of monitoring factors considered. The easily measureable features are chosen in order make prediction this will efficiently reduce the cost of the system.

INDEX TERMS: Forest fire, Artificial Intelligence, Logistic regression, Computationally Effective.

Literature Survey:

S.NO	TITLE	YEAR	METHODOLOGY	BENEFITS
1.	A Neural Network Model for Wildfire Scale Prediction Using Meteorological Factors	2019	A backpropagation neural network (BPNN), a recurrent neural network (RNN), and long short term memory (LSTM) models are deployed.	Factors like size of burned area and fire duration are used to estimate the scale of fire.
2.	Distributed Event Detection in Wireless Sensor Networks for Forest Fires	2013	Various wireless sensors are used in this method. Sensors are placed at different hotspots and an unusual event is detected. Information	Based on Information received at base station Intelligent decision were made.

			passed to base station.	
3.	Forest Fires Segmentation using Deep Convolutional Neural Networks	2021	To Overcome limitation like false detection of fire pixels. They propose three deep convolutional networks U-Net, U2-Net, and EfficientSeg.	This models shows good performance in terms of accuracy and proved reliability to segment fire pixels.
4.	Decision Tree based System on Chip for Forest Fires Prediction	2020	This method based on Intellectual property core development for forest fire prediction.To speed up the process by decision locally at	Hardware implementation results of the decision tree based forest fires prediction system on chip show that the developed IP core.

			sensor node level.	
5	Deep Learning Approach to Predict Forest Fires Using Meteorological Measurements	2021	This project rely on Forest Fire Weather index Information. Long short term memory (LSTM) model used to deploy prediction of forest fire.	Since various metrics are used to evaluate the accuracy of proposed model. Results shows proposed models produce reasonable predictions.