Natural Disaster Intensity Analysis And Classification Using Artificial Intelligence

Introduction

The proposed system natural disasters not only disturb the human ecological system but also destroy the properties and critical infrastructures of human societies and even lead to permanent change in the ecosystem .To tackle this problem, we developed a multi layered deep convolutional neural network model that classifies the natural disaster and tells the intensity of disaster of natural .The model uses an integrated webcam to capture the video frame and the video frame is compared with the Pre-trained model and the type of disaster is identified and showcased on the OpenCV window.

Literature Review 1

Title: Application of data mining techniques to combat natural disasters.

Author: Saptarsi Goswami, Sanjay Chakraborty

Abstract: Thousands of human lives are lost every year around the globe, apart from significant damage on property, animal life, etc., due to natural disasters (e.g., earthquake, flood, tsunami, hurricane and other storms, landslides, cloudburst, heat wave, forest fire). In this paper, we focus on reviewing the application of data mining and analytical techniques designed so far for (i) prediction, (ii) detection, and (iii) development of appropriate disaster management strategy based on the collected data from disasters. A detailed description of availability of data from geological observatories (seismological, hydrological), satellites, remote sensing and newer sources like social networking sites as twitter is presented. An extensive and in-depth literature study on current techniques for disaster prediction, detection and management has been done and the results are summarized according to various types of disasters. Finally a framework for building a disaster management database for India hosted on open source Big Data platform like Hadoop in a phased manner has been proposed. The study has special focus on India which ranks among top five counties in terms of absolute number of the loss of human life.

Literature Review 2

Title : Social media analytics for natural disaster management

Author : Zheye Wang, Xinyue Ye

Abstract : Social media analytics has become prominent in natural disaster management. In spite of a large variety of metadata fields in social media data, four dimensions (i.e. space, time, content and network) have been given particular attention for mining useful information to gain situational awareness and improve disaster response. In this article, we review how existing studies analyse these four dimensions, summarize common techniques for mining these dimensions, and then suggest some methods accordingly. We then propose a schema to categorize the gathered articles into 15 classes and facilitate the generation of data analysis tasks. We find that (1) a large part of studies involve multiple dimensions of social media data in their analyses, (2) there are both separate analyses for each dimension and simultaneous analyses for multiple dimensions and (3) there are fewer simultaneous analyses as dimensions increase. Finally, we suggest research opportunities and challenges in fusing social media data with authoritative datasets, i.e. census data and remote-sensing data.

Literature Review 3

Title :Assessing natural hazards in forestry for risk management a review

Author :Marc Hanewinkel, Susan Hummel, Axel Albrecht

Abstract :We address the problem of how to integrate risk assessment into forest management and therefore provide a comprehensive review of recent and past literature on risk analysis and modelling and, moreover, an evaluation and summary on these papers. We provide a general scheme on how to integrate concepts of risk into forest management decisions. After an overview of the risk management process and the main hazards in forests (storm, snow, insects, fire), the paper focuses on the principal methods used to assess risks from these hazards for commercial forestry. We review mechanistic models, empirical models, and expert systems and consider the needs for different spatial scales of risk assessment, from the regional to the single-tree level. In addition to natural hazards and their secondary effects, we deal with economic aspects of risk analysis. Monte Carlo simulations to deal with volatile timber prices and ways to include risk in classical Faustmann approaches are briefly discussed along with the integration of portfolio theory into forest management decision making and attitude toward risk. Special attention is paid to the implications for risk modelling under climate change.

Literature Review 4

Title :Application of data mining techniques to combat natural disasters

Author : Saptarsi Goswami, Sanjay Chakraborty

Abstract :Thousands of human lives are lost every year around the globe, apart from significant damage on property, animal life, etc., due to natural disasters (e.g., earthquake, flood, tsunami, hurricane and other storms, landslides, cloudburst, heat wave, forest fire). In this paper, we focus on reviewing the application of data mining and analytical techniques designed so far for (i) prediction, (ii) detection, and (iii) development of appropriate disaster management strategy based on the collected data from disasters. A detailed description of availability of data from geological observatories (seismological, hydrological), satellites, remote sensing and newer sources like social networking sites as twitter is presented. An extensive and in-depth literature study on current techniques for disaster prediction, detection and management has been done and the results are summarized according to various types of disasters. Finally a framework for building a disaster management database for India hosted on open source Big Data platform like Hadoop in a phased manner has been proposed. The study has special focus on India which ranks among top five counties in terms of absolute number of the loss of human life.

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