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Effective Plans during Earthquake Emergencies for Medical Treatment

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Abstract: *The collapse of buildings caused by earthquakes can lead to a large loss of life and property. Rapid assessment of building damage with remote sensing image data can support emergency rescues. However, current studies indicate that only a limited sample set can usually be obtained from remote sensing images immediately following an earthquake. Consequently, the difficulty in preparing sufficient training samples constrains the generalization of the model in the identification of earthquake-damaged buildings. To produce a deep learning network model with strong generalization, this study adjusted Convolution Neural Network (CNN) models for extracting earthquake detection, damaged building information and compared their performance. A sample dataset of damaged buildings, earthquake detection, was constructed by using multiple disaster images retrieved from our dataset. These results provide a solution to the rapid extraction of earthquake-damaged building information based on a deep learning network model.*

Keywords: Earth quick, Image Processing, Emergency, CNN

I. INTRODUCTION

Earthquake safety is a significant issue, particularly in earthquake-prone regions. Based on the report of the Seismological Society of America in California, over 50,000 earthquakes happen annually[1]. In an urban area, an earthquake with a magnitude above 5 on the Richter scale may be dangerous for human life. Twenty of the earthquake shocks scored 7 and above; that may be life-threatening for humans. Table 1 shows the world's largest earthquakes with their magnitudes, locations, and dates of occurrence. Because of the uncertainty of earthquakes, it is difficult to take the necessary precautions to emergencies promptly [1]. People inside living rooms, offices, or dining halls are under risk in such a serious earthquake situation. Many common objects are potentially dangerous because they may fall, hinder movement, or collapse in critical situations. To cope with earthquake crisis in the indoor environment, a possible approach is to teach people about the situation using virtual reality[2]. A virtual simulation system teaches people to recognize potentially harmful objects in earthquake situations by using a physical motion simulation engine[3]. However, there is no image or video-based recognition system that would help people to be informed about dangerous indoor objects of their rooms with associated risk tags. The recent exploitation of natural resources and associated wastewater injection in the subsurface has induced many small and moderate earthquakes in the tectonically quiet Central United States[4]. Induced earthquakes contribute to seismic hazard. Between 2008 and 2017 only, nine earthquakes of magnitude greater than 5.0 might have been triggered by nearby disposal wells. Most earthquake detection methods are designed for moderate and large earthquakes. As a consequence, they tend to miss many of the low-magnitude earthquakes that are masked by seismic noise. Detecting and cataloguing these earthquakes are key to understanding their causes (natural or human-induced) and, ultimately, to mitigating the seismic risk. Disaster detection has been one of the most active research areas in remote sensing today because saving human lives is our priority once a disaster occurred. It is crucial in the coordination of fast response actions after a destructive disaster such as landslide. This study adjusted Convolution Neural Network (CNN) mod SKNCOE, Computer Engineering 2021 for extracting earthquake detection, damaged building information and compared their performance. A sample dataset of damaged buildings, earthquake detection was constructed by using multiple disaster images retrieved from our dataset. These results provide a solution to the rapid extraction of earthquake damaged building information based on a deep learning network model. Neural networks provide multilevel network architectures, where Convolution Neural Networks (CNNs) are the most frequently implemented architecture as the direct input of multidimensional vector images, speech recognition, and image processing can be carried out with low complexity. CNNs efficiently perform feature extraction by denoising the

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images and removing interference and achieve highly accurate results.

II. Problem Definition

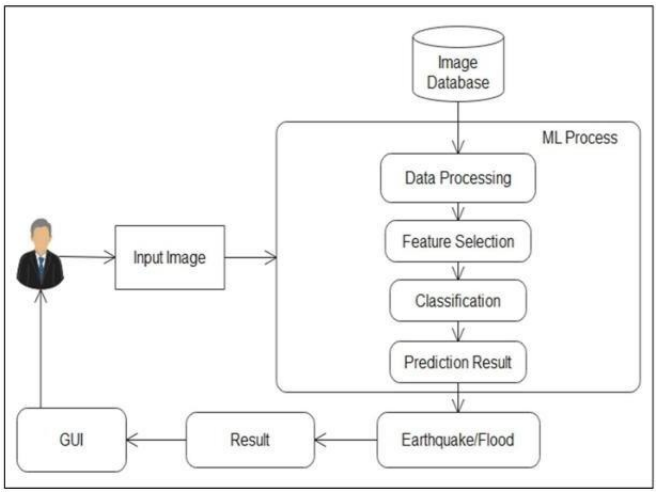
The problem in the disaster management is not lack of technology or existence of the relevant information. Early warning systems are an important component of disaster risk management strategies. In contrast to earthquake systems, which assess earthquake risk, the main purpose of early warning systems is to issue warnings when an earthquake is imminent or already occurring.

III. Proposed System

3.1 Description:

Emergencies and disasters impact population's health. Public health plays a critical role in working with health and non-health sectors responsible for preparing for and responding to emergencies. In emergencies, large numbers of people may require medical attention. Health care systems may be over-stretched, and public order may be threatened. Hence, we want software solution such that social media can be used in public health emergency response. Such tool/page/plugin should have the below capabilities.

1. Alarm message during emergencies
2. Help in finding nearby available healthcare systems
3. Providing First aid/primary steps to be taken



IV. Methodology

The disaster management is not lack of technology or existence of the relevant information. Early warning systems are an important component of disaster risk management strategies. In contrast to existing systems, which assess Risk, the main purpose of early warning systems is to issue warnings. We are going to avoid these problems by implementing our system to detect earthquake using machine learning technique. A sample dataset of damaged buildings, earthquake detection was constructed by using multiple disaster images retrieved from our dataset. These results provide a solution to the rapid extraction of earthquake damaged detection based on a deep learning network model.

Neural networks provide multilevel network architectures, where Convolution Neural Networks (CNNs) are the most frequently implemented architecture as the direct Input of multidimensional vector images, speech recognition, and image processing can be carried out with low complexity. CNNs efficiently perform feature extraction by denoising the images and removing interference and achieve highly accurate results. This study is to get quick alert system to the user of earthquake happened in particular location. By using alert generation, we can alert by using alarm system in critical situations. When image is an input to the server sends data to the web crawler using machine learning algorithm. -web crawler collects data from server and store it in database -after checking input to the database it gives respective results like emergencies detected in area ,Alert and suggesting nearby hospital

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V. MATHEMATICAL MODEL

The Mathematical Model used following inputs: function CNN ()
Validator: Here this module is responsible for periodically scanning the earthquake image computing the dataset values for final prediction.
Set V{} =
V0=Get the earth quick image (I)
V1=Visit each image for each interval I
V2=Load a record from the dataset
V3=Load all Library for analysis
V4=Read all values from the image
V5=Compare all earth quick image values from the dataset
V6= Final earth quick prediction
And The Mathematical Model returns following output:

1. Success Conditions: Success system when final prediction analysis.
2. Failure Conditions: Our system fails when no prediction gets from the earth's quick image

VI. ACKNOWLEDGMENT

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VII. CONCLUSION

The prediction algorithm is design to predict the area in danger zone of particular earthquake by considering the locality from the database to calculate the results. The results have to be the same as the Python output, as well as keeping to an acceptable processing speed and duration. The research will focus on the benefits it can provide for the successful diagnosis of earthquake.

VIII. FUTURE WORK

In future work we enhance this system with help of IoT methodology, based on sensors and radar technology. Arduino GSM shield can be used for making voice call to alert people. Also, Solar powered micro-controllers can be used, so system will not need batteries or electricity for working.

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