NATURAL DISASTERS INTENSITY ANALYSIS AND CLASSIFICATION USING ARTIFICIAL INTELLIGENCE

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IDEATION

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1. The videos and images are the datasets where videos are collected from the youtube social media. Since videos contain both visual and audio modalities, two separate deep learning models are designed for each modality. The visual data are processed using a spatio-temporal model based on CNN and LSTM networks.The audio model is trained using a pretrained CNN model called SoundNet. A novel fusion model based on MCA is proposed to combine the scores from the audio and visual models.Video scene changes can be detected by PySceneDetect and also finding the intensity of the disaster by neural network-based feature extraction techniques.

2. A new technology named generative adversarial networks (GAN) is used for adversarial training to generate high-quality image samples, and has more powerful capabilities of feature learning.Here, primary testing and secondary testing are done for detecting the image.The primary identification uses HOG feature + Adboost classifier, and the secondary identification uses CNN + SVM classifier.After the training we can identify the which type of disaster and labelling of disaster image.Finally risk and intensity level are identified by neural network-based feature extraction techniques.

3. The dataset image was preprocessed to remove the noise by using an adaptive histogram equalizer. The whole dataset was divided into three groups: training, testing and validation. The multilayered deep convolutional neural network is used to find the occurance of any type of disasters in the images (dataset) and then finding the types of disaster and labelling it on the identified image and neural network-based feature extraction techniques are applied to analyze the intensity of the disaster by examining the facial expression of victims and also finding the risk of the disaster by multiplying hazards derived from probability and intensity with vulnerability.