Literature Survey

DATE	14-10-2022
TEAM ID	IBM-EPBL/IBM-Project-17404-1659669015
PROJECT NAME	Natural Disasters Intensity Analysis and Classification using Artificial Intelligence
MAXIMUM MARKS	4 Marks

Authors:

1.Muhammad Aamir, 2.Tariq Ali, 3.Muhammad Irfan, 4. Ahmad Shaf, 5. Muhammad Zeeshan Azam, 6.Adam Glowacz, 7.Frantisek Brumercik, 8.Witold Glowacz, 9.Samar Alghtani, 10.Saifur Rahman.

Abstract:

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. Disaster can be caused by naturally occurring events such as earthquakes, cyclones, floods, and wildfires. Many deep learning techniques have been applied by various researchers to detect and classify natural disasters to overcome losses in ecosystems, but detection of natural disasters still faces issues due to the complex and imbalanced structures of images. To tackle this problem, we propose a multilayered deep conventional neural network. The model is tested on 4428 natural images and performance is calculated and expressed as different statistical values: sensitivity (SE), 97.54%; specificity (SP), 98.22%; accuracy rate (AR), 99.92%; precision (PRE), 97.79%; and F1-score (F1), 97.97%. The overall accuracy for the whole model is 99,92%, which is competitive and comparable with state-of-the-art algorithms.

Keywords: deep learning, natural disasters intensity and classification, conventional neural network.

Authors:

Ling Tan ,J i Guo, Selvarajah Mohanarajah, Kun Zhou.

Abstract:

There has been an unsettling rise in the intensity and frequency of natural disasters due to climate change and anthropogenic activities. Artificial intelligence (AI) models have shown remarkable success and superiority to handle huge and nonlinear data owing to their higher accuracy and

efficiency, making them perfect tools for disaster monitoring and management. Accordingly, natural disaster management (NDM) with the usage of AI models has received increasing attention in recent years, but there has been no systematic review so far. Systematic review on how Al models are applied in different NDM stages based on 278 studies retrieved from Elsevier Science, Springer LINK and Web of Science.

Authors:

Muhammad Aamir Muhammad Aamir, Tariq Ali, Muhammad Irfan, Ahmad Shaf.

Abstract:

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 Disaster can be caused by naturally occurring events such as earthquakes, cyclones, floods, and wildfires. Many deep learning techniques have been applied by various researchers to detect and classify natural disasters to overcome losses in ecosystems. To tackle this problem, we propose a multilayered deep convolutional neural network. The model is tested on 4428 natural images and performance is calculated and expressed as different statistical values: sensitivity (SE), 97.54%; specificity (SP), 98.22%; accuracy rate (AR), 99.92%; precision (PRE), 97.79%; and 1-score (11), 97.97%. The overall accuracy for the whole model is 99.92%, which is competitive and comparable with state-of-the-art algorithms.

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