LITERATURE SURVEY

TITLE : Natural Disasters Intensity Analysis and Classification using AI

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CONTENT

- Objectives
- Abstract
- Project Description
- Project Architecture
- Technologies Used
- Methodology
- Result and Discussion
- Reference

OBJECTIVES

- Artificial intelligence (AI), in particular machine learning (ML), is playing an increasingly important role in disaster risk reduction (DRR) – from the **forecasting of extreme events and the development of hazard maps to the detection of events in real time, the provision of situational awareness and decision support**,

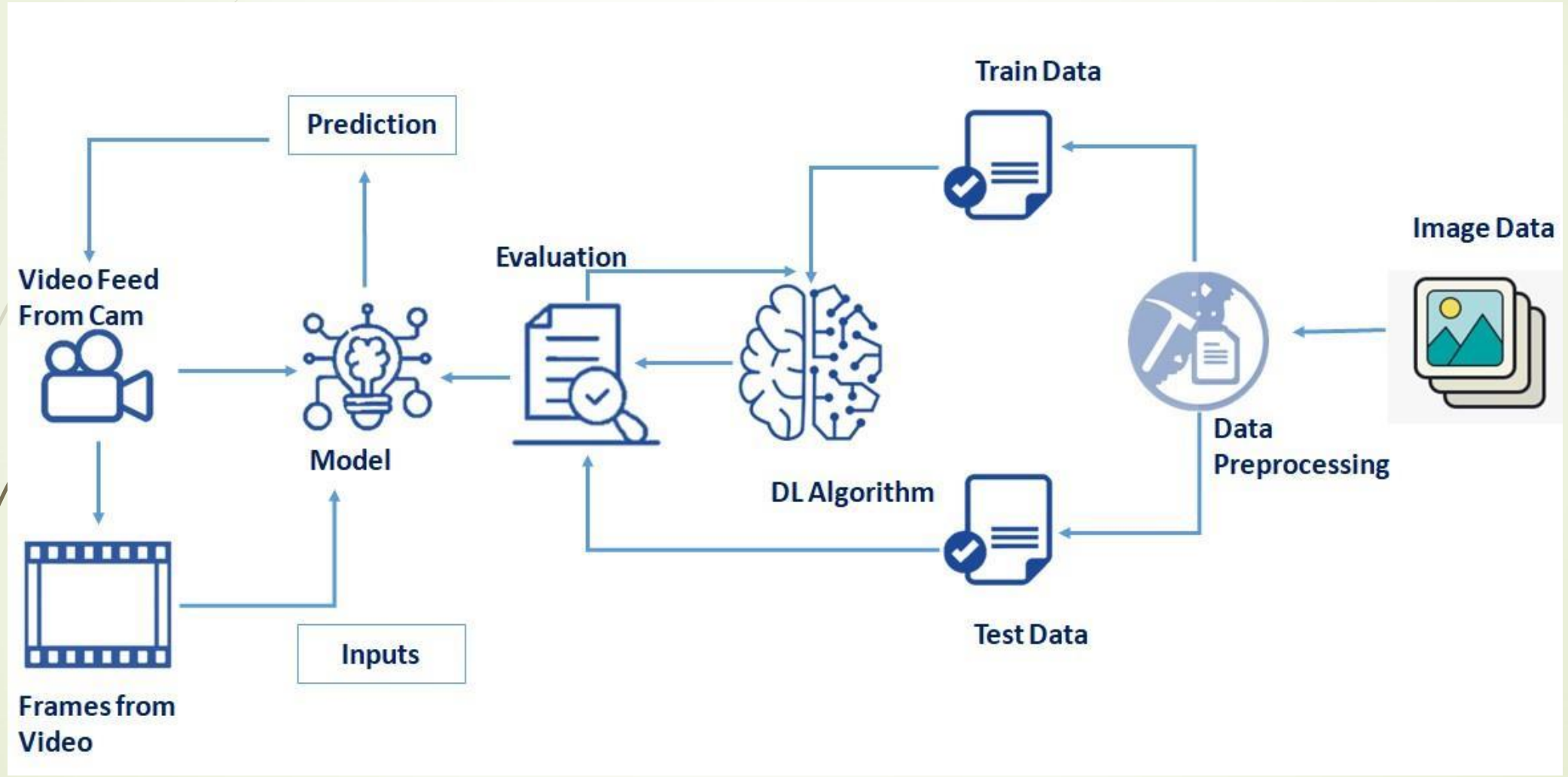
ABSTRACT

- 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.
- The proposed model works in two blocks: block-i convolutional neural network (b-i cnn), for detection and occurrence of disasters, and block-ii convolutional neural network (b-ii cnn), for classification of natural disaster intensity types with different filters and parameters.

PROJECT DESCRIPTION

- 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.
- 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.

PROJECT ARCHITECTURE



TECHNOLOGIES USED

- Python
- CNN
- IBM Cloud
- IBM Watson Studio
- IBM Cloudant DB
- Deep Learning
- PythonFlask

METHODOLOGY

- This section defines the overall method for natural disaster intensity analysis and classification based on multispectral images using a multilayered deep convolutional neural network.
- **Two Blocks**

→The first block detects a natural disaster occurring and the second one defines the intensity type of the natural disaster. Additionally, the first block consists of three miniconvolutional blocks with four layers each, including an image input and fully connected layers.

→The second block also consists of three miniconvolutional blocks with two layers each and includes an image input layer and fully connected layer.

RESULT AND DISCUSSION

- The proposed multilayered deep convolutional neural network was simulated on the computer system with Core i7, Central Processing Unit (CPU) 2.8 Ghz with 16 GB RAM in MATLAB 2018a and different types of results were calculated.

REFERENCE

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