MES COLLEGE OF ENGINEERING, KUTTIPPURAM
DEPARTMENT OF COMPUTER APPLICATIONS
20MCA245 – MINI PROJECT

PRO FORMA FOR THE APPROVAL OF THE THIRD SEMESTER MINI PROJECT

(Note: All entries of the pro forma for approval should be filled up with appropriate and complete information. Incomplete Pro forma of approval in any respect will be rejected.)

Mini Project Proposal No : _____
(Filled by the Department)

Academic Year : ___2021-2022_____

Year of Admission : ___2020_____

1. Title of the Project : Deep learning for Landslide recognition in Satellite architecture

2. Name of the Guide : _____

3. Number of the Student: MES20MCA-2023

4. Student Details (in BLOCK LETTERS)

Name	Roll Number	Signature
1. JUMANA M	23	

Date: 1/12/2021

Approval Status : Approved / Not Approved

Signature of
Committee Members

Comments of The Mini Project Guide   Dated Signature

Initial Submission :

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First Review :

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Second Review :

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Comments of The Project Coordinator   Dated Signature

Initial Submission:

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First Review

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Second Review

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Final Comments :   Dated Signature of HOD

Introduction:

In recent years, satellite technology and remote sensing technology is fast developing. Thus, a large number of works related to image processing in remote sensing of the Earth. Application of satellite remote sensing to capture the Earth is rapidly increasing in number as well as image quality. It plays a significant role in the Earth's surface monitoring. Objects detection in remote sensing is to define one or more objects belong to a class and their locations in the image. Their objects have many different sizes and are divided into two types (small and large). Small objects may be vehicles, ships, planes, buildings, etc. Identifying these small objects helps to monitor urban areas, airports, seaports, etc. To detect smaller objects, higher image resolution of the image is required. Besides, large objects may be forest   covered regions, lakes, river flow, landslides, etc. Environment observation research is also essential in the exploitation of satellite image data. In study of environment, because identifiable objects are in the large size group, we can use medium or low-resolution images to observe an object.

Objectives:

This paper proposes an architecture that combines deep learning and image processing to detect landslides from satellite image, including:

1) Landslide dataset from the medium-resolution satellite image;
2) Landslide region classification by deep learning model (Convolution Neural Network);
3) Landslide region localization by proposed algorithm with named H-BEMD (Hue Bi-dimensional empirical mode decomposition)

Problem Definition:

Using the optical camera in remote sensing is limited in various environmental conditions.
This paper presents a system of combining deep learning and image transform algorithms to detect landslide location in satellite images. In the deep learning part, a convolution neural network is used to classify satellite images contain landslides. From landslide images classified, in order to accurately identify landslides under different lighting conditions, this paper proposes a transformation algorithm Hue – Bi-dimensional empirical mode decomposition (H-BEMD) to determine the landslide region and size. After the location of landslide is detected, we discover the size change of the landslide based on different time points. In this study, we record an accuracy of up to 96% in the classification process, and the accuracy of landslide location almost absolute.

Basic Functionalities:

Tried to propose an improvement algorithm to detect landslide region on hue channel from satellite image.

Tools/Platform, Hardware and Software Requirements:

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Python based computer vision and deep learning libraries will be exploited for the development and experimentation of the project. Training will be conducted on NVIDIA GPUs for training the CNN.