Post Disaster Damage Assessment Model using Geospatial Data in the Satellite Images.

J. A. B. C. Kanchana
MS20910822

M.Sc. in IT

Specialized in Information Technology

Supervisor: Dr. Anuradha Jayakody

November 2021

16010

Department of Information Technology
Faculty of Graduate Studies and Research
Sri Lanka Institute of Information Technology

DECLARATION

I hereby declare that the project work entitled Post Disaster Damage Assessment Model using Geospatial Data in the Satellite was submitted to the course Research Project, Sri Lanka Institute of Information Technology, was a record of an original work done by J. A. B. C. Kanchana, Under the guidance of Dr. Anuradha Jayakody, Supervisor of the project. The results in this report have not been submitted to any other university or institute for the award of any degree or diploma. This document is proprietary and exclusive property of the SLIIT. List of references I referred for the preparation of this document are given as references at the end of the document

Student Name: J. A. B. C. Kanchana

Registration No: MS20910822

Signature Date:

The above candidate has carried out research for the MSc in Information Technology Dissertation under my supervision.

Signature of the supervisor: Date:

Abstract

Natural disasters can happen without prior warning at any time. It is important to identify and analyses the post disaster situation to manage the disaster with quick response. Traditional approaches for disaster analyzing using field surveys are not suitable due to its high risk, time consuming, labor consuming and costly. In that case Satellite imagery data is ideal to use for identifying the disaster situation, risk mitigation and post disaster recovery because it's easy to get the data at anyplace, anytime. However, the processing of satellite imagery is a significant difficulty and identifying things in a satellite image is crucial in this field. By using satellite imagery with the newest technologies like the deep learning approaches can be used to identify the disaster area. Accuracy and efficiency are a very important factor for making damage assessments and providing relief services. This research focused at how deep learning can be used to assess building damage using satellite imageries. The objective of this research is to develop a building damage assessment model by using deep learning, which can be use in post disaster analysis. According to the literature survey encoder – decoder model and Siamese model used for process the pre and post disaster satellite images and assess the damage.

Acknowledgement

I would like to express my profound gratitude and deep regards to those who contributed for the success of this final year research project. First and foremost, I would like to thank my project supervisor, Head Faculty of Graduate Studied and Research Dr. Anuradha Jayakody for their exemplary guidance, monitoring, constant encouragement to complete this task and guidance through the course.

I am much obliged to thank the staff members if the Sri Lanka Institute of Information Technology who provided valuable knowledge in their respective fields throughout the study period of two years which helped to make this task successfully.

Finally, a special thank goes to my family members and friends for their constant encouragement without which this project would not have been possible.

Thank you.

Table of Contents

List of Figures

List of Tables

List of Equations