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# Seismological Data Warehousing and Mining System for Seismic Network in Sri Lanka

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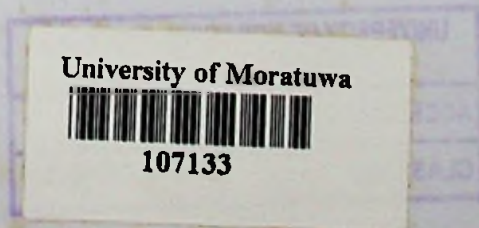
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## Declaration

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## ABSTRACT

Earthquake data composes an ever increasing collection of earth science information for post-processing analysis. Earth scientists, Geologist, administration officers are working with these data collections for scientific or planning purposes. Therefore, collecting of seismic data is very much useful. We propose a seismic data management system and analyzing system for seismological data collected in the local seismic network system in Sri Lanka. Although several hundreds of earthquakes and earth tremors reported in and around Sri Lanka during the last decade, detailed investigation of their activity has not been carried out. The unavailability of suitable seismic network system for Sri Lanka and the lack of expertise for analyzing such data are two main reasons for this. Therefore we try to investigate possible location of seismic station and study the method of data management system.

By using available seismic data and the location of seismically active regions a suitable locations for seismic stations are proposed. One of the most important parts of the present study is to create a Seismological Information Data warehouse to store the data coming from the seismic network system and global network data, and managing existing database. Since this type of local seismic station system has not been installed yet, the maintaining procedure of the proposing database is tested using the available global data from the IRIS data management center.

A seismic data management system and analyzing system for seismological data collected in the local seismic network are discussed. The QlikView Business Intelligent Tool is used to develop the algorithm for visualization of data stored in the proposed seismic network system. Various types of profiles can be visualized using QlikView visualization method. Then we try to discuss the architecture of a seismic data management and mining system for quick and easy data collection, processing. The database is creating using SQL server and applying the data to the software for creating data warehouse, Querying, and Mining of seismic data stored in the database.

Giving earthquake information alert to general public and government administrative officers are also an important task. We therefore made an attempt to give earthquake information to relevant authorities using our database. If an earthquake takes place, the region where the earthquake occurred can be identified using our database. Then location of the event can be informed with respect to the famous cities in Sri Lanka.

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## Abbreviations

BI - Business intelligence

DSS - Decision support system

DMC - Data Management Center

ETL- Extract, Transform and Load

ISC - International Seismological Centre

IRIS - Incorporated Research Institutions for Seismology

IR - International Seismograph Station Registry

SIDW - Seismological Information Data warehouse

