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**STATISTICAL MODELING OF TOPOGRAPHIC ELEVATION USING  
SHUTTLE RADAR TOPOGRAPHY MISSION DIGITAL ELEVATION  
DATA**

A PROJECT REPORT PRESENTED BY

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# STATISTICAL MODELING OF TOPOGRAPHIC ELEVATION USING SHUTTLE RADAR TOPOGRAPHIC MISSION DIGITAL ELEVATION DATA

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This study was based on two data sets, namely, SRTM data set and Contour data set and these two data sets were used to evaluate their difference in elevations. Both data sets have four different sub data sets, which are corresponding to four locations; Paddhiruppu, Kegalle, Badulla, and Katharagama, in Sri Lanka.

The SRTM data set has more data, that is available for all places in Sri Lanka, and it follows the shape of the actual ground level. But not the actual elevation of the surface and it is shifted up or down. This error occurs due to the height of the trees or errors in calculation algorithms.

The Contour data set was obtained from the actual ground survey data using ArcGIS software and this survey data is more reliable, but more expensive. Measuring elevation for all the places in Sri Lanka is a costly procedure. This study considers contour data set only for four places, which are corresponding to the locations; Paddhiruppu, Kegalle, Badulla, and Katharagama, in Sri Lanka.

Therefore, finding a method to evaluate the approximated value of elevation for all places in Sri Lanka with a less cost is essential. The main objective was finding a statistical model to evaluate the Contour data of anywhere in Sri Lanka. If SRTM data is known then using the model Contour data can be predicted. SRTM data are available in 90m×90m squared grid and therefore, the Contour data were also prepared in the same way.

According to the Geography of Sri Lanka, three zones are distinguishable by elevation: the central highlands, the plains, and the coastal belt. Three time series regression models were fitted for each cluster. The fourth data set was used for the validation and identified that the relevant model was given the approximated value for contour elevation.

As a part of this research, study of the Generalized Lambda Distribution (GLD) was carried out. GLD is comparatively recent origin and developing rapidly. By using GLD the deference data, difference between SRTM and Contour, was defined.

Key words: SRTM, Contour, GLD.