Landslide hazard is one of the most common natural hazards, which has a profound influence on the human beings and environment leading to heavy economic loss every year. Therefore, landslide hazard monitoring and prediction have been paid attention hitherto in different parts of the world in a systematic manner by using many methods and studies have been conducted both at micro and macro levels. In India, many studies were conducted in Himalayan region and few studies in Western Ghats. Kundha watershed is a landslide prone area located in the eastern side of the Western Ghats region. Hence, a landslide susceptibility map for this study area is necessary for the administration and also to ensure the well being of the local inhabitants. In this context, this watershed has been selected for the study.

To analyse the landslide susceptibility of the study area, the inventory map and the thematic maps are prepared by collecting data from various government organizations and periodic and systematic field visits to the Kundha watershed. Suitable model has been proposed to weigh the factors, and generate a reliable landslide susceptibility map for the Kundha watershed using fuzzy systems. Frequency ratio method, a conventional method, is also used to generate landslide susceptibility map for the purpose of comparison. The landslide susceptibility map is validated using the inventory map. The model developed using the fuzzy logic is converted into
an application using C#.net. The application is tested for the nearby location Kuruvenuhalla watershed.

The validation results show satisfactory agreement between the landslide susceptibility map and the landslide locations for fuzzy system method. Sixty seven percent and twenty five percent of the landslides fall under the high and very high category of landslide susceptibility map respectively, which authenticates the accuracy of the prediction power of the proposed model. But, in case of frequency ratio method, sixty percent and seven percent of the landslides fall under the high and very high category of landslide susceptibility map respectively. The fuzzy method, combined with the use of remote sensing and GIS spatial data, yields a reasonably accurate value for the landslide forecasting compared to the frequency ratio method.

The validation results of the Kuruvenuhalla watershed using the application developed shows good results. Fifty percent of the watershed falls under the high category, and forty two percent of the watershed falls under very high category of landslide susceptibility. Zero percent of the landslide occurrence falls under the low susceptibility area.

The present study thus provides adequate and needed information about the susceptibility status of the Kundha watershed. It is suggested that the landslide susceptibility model proposed in this work shall be applied to study the watersheds in the nearby areas and elsewhere.