

PREFACE

The increasing frequency and severity of landslides in hilly and mountainous regions pose significant threats to life, property, and infrastructure. Rudraprayag district in Uttarakhand, located in the seismically active and geologically fragile Indian Himalayas, is particularly susceptible to these natural hazards. This report, "Landslide Vision: Interactive Monitoring for Safety," is submitted as part of the partial fulfillment of the M.Sc. degree at the Symbiosis Institute of Geoinformatics. It aims to provide a comprehensive analysis of landslide susceptibility in Rudraprayag using advanced Geographic Information System (GIS) tools and methodologies.

The primary objective of this study is to identify potential landslide-prone zones and develop an interactive web application to visualize these areas. By integrating multi-criteria decision-making techniques, such as the Analytical Hierarchy Process (AHP), with remote sensing data and field observations, this research offers a robust framework for landslide risk assessment. The methodology includes the preparation of thematic maps for various factors like slope, rainfall, elevation, geology, and proximity to roads and streams, followed by a weighted overlay analysis to generate a landslide susceptibility map.

This report also delves into the creation of an interactive web application featuring common and custom GIS tools, enhancing user engagement and understanding. Such tools are invaluable for local authorities, planners, and disaster management teams in devising effective mitigation strategies. The future prospects highlighted in this study emphasize the need for continuous updates and refinements of the GIS application, as well as the potential for extending these methodologies to other vulnerable regions.

Acknowledging the complex interplay of natural and anthropogenic factors in landslide occurrences, this research underscores the importance of a holistic, interdisciplinary approach to disaster risk management. It is hoped that the insights and tools developed through this study will contribute to safer and more resilient communities in the landslide-prone areas of the Indian Himalayas and beyond.