PREFACE

Remote sensing is one of the hottest topics of research, which intends to study or analyse a particular object in the topographic map. It is beneficial for the governing bodies, if the objects in the satellite image can be tracked. This kind of monitoring and management is possible, when the objects in the satellite image are differentiated. However satellite image classification is not easy, as it consists of numerous minute details. Besides this, the accuracy and faster execution of the classification system comes into picture.

Vegetation classification system is one of the evergreen applications of remote sensing technology. The vegetation classification system helps in measuring the production ratio of a specific crop, the availability of the crop and the current status of the crop can be monitored. Taking the manifold benefits of vegetation classification system, this thesis presents several solutions for this problem. Instead of dealing with the problem directly, this work proceeds step-by-step. This thesis is decomposed into seven chapters and the outline of the chapters is presented below.

Chapter 1 presents the basic concepts of satellites and remote sensing. Additionally, the motivation and the objectives of the research are also presented. The fundamental image processing activities are described in chapter 2, along with the summary of the related works. Chapter 3 presents a texture based satellite image classification system based on SVM. This work classifies between the vegetation, soil and water bodies. The enhancement of this work is described in chapter 4, which differentiates between the vegetation, soil and water bodies. The differentiation is carried out by employing curvelet features and ELM classifier.

Chapter 5 presents a vegetation classification system based on pseudo zernike moments and ELM classifier. This work differentiates between the vegetation types such as trees, shrubs and grasslands. The objective of this research work is attained in chapter 6, which classifies between three different crops by employing ensemble classifier. The features being utilized for this work are GLVP and SIFT.

The performance of all the works are analysed in terms of classification accuracy, sensitivity and specificity rates. The final chapter of this thesis, which is chapter 7 presents the summary of the research findings and the conclusion. In addition to this, the possible future enhancements are also presented.