

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

*"Jnana Sangama" Belagavi - 590 010*



**PROJECT REPORT ON**

**"Pixel Based Classification of Multispectral Remote  
Sensed Data using Decision Tree Classifier"**

*Submitted in partial fulfillment of the requirements for the award of degree*

**BACHELOR OF ENGINEERING  
IN  
ELECTRONICS & COMMUNICATION ENGINEERING**

**Submitted By**

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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING  
ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY**

**MOODBIDRI - 574 225.**

**2018-2019**

# ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

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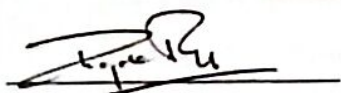
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

## CERTIFICATE

*Certified that the project work entitled "Pixel Based Classification of Multispectral Remote Sensed Data using Decision Tree Classifier" is a bona fide work carried out by*

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in partial fulfillment for the award of BACHELOR OF ENGINEERING in ELECTRONICS & COMMUNICATION ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the year 2018-2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.



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13/06/19



## ABSTRACT

Remote sensing is the science and art of obtaining information about an object through the analysis of data acquired by a device that is not in contact with the object. Remotely sensed data can be of many forms, including variations in force distribution, acoustic wave distribution or electromagnetic energy distributions and can be obtained from a variety of platforms, including satellite, airplanes, remotely pilot vehicles, handheld radiometers or even bucket trucks. They may be gathered by different devices, including sensors, film camera, digital cameras, and video recorders. Our eyes acquire data on variations in electromagnetic radiations. Instruments capable of measuring electromagnetic radiation are called sensors. Sensors can be differentiated in two main groups: Passive sensors: without their own source of radiation. They are sensitive only to radiation from a natural origin. Active sensors: which have a built in source of radiation. Examples are Radar and Lidar systems.

In this project, an attempt has been made to develop a decision tree classification algorithm for remotely sensed satellite data using the separability matrix of the spectral distributions of probable classes in respective bands. The spectral distance between any two classes is calculated from the difference between the minimum spectral value of a class and maximum spectral value of its preceding class for a particular band. The decision tree is then constructed by recursively partitioning the spectral distribution in a Top-Down manner. Using the separability matrix, a threshold and a band will be chosen in order to partition the training set in an optimal manner. The classified image is compared with the image classified by using classical method Maximum Likelihood Classifier (MLC).