A

Project Report

on

MANET FOR COMMUNICATION

Submitted in Partial Fulfillment of

the Requirements for the Degree

of

Bachelor of Engineering

in

Computer Engineering

to

North Maharashtra University, Jalgaon

Submitted by

Vinaya E Patil
Shivani Suryavanshi
Mayur Saner
Bhushan Sarode
Viplav .P.Patil

Under the Guidance of

Prof. Dr. Girish K. Patnaik

DEPARTMENT OF COMPUTER ENGINEERING
SSBT's COLLEGE OF ENGINEERING AND TECHNOLOGY,
BAMBHORI, JALGAON - 425 001 (MS)
2013 - 2014

SSBT's COLLEGE OF ENGINEERING AND TECHNOLOGY, BAMBHORI, JALGAON - 425 001 (MS)
DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that the project entitled *MANET for Communication*, submitted by

Vinaya E Patil
Shivani Suryavanshi
Mayur Saner
Bhushan Sarode
Viplav .P.Patil

in partial fulfillment of the degree of *Bachelor of Engineering* in *Computer Engineering* has been satisfactorily carried out under my guidance as per the requirement of North Maharashtra University, Jalgaon.

Date: September 26, 2016
Place: Jalgaon

Prof. Dr. Girish K. Patnaik
Guide

Prof. Sushant Bahekar
Head

Prof. Dr. K. S. Wani
Principal

Acknowledgements

Hello how are you? vvvvvvvvvv vvvvvvvvvvvvvv vvvvvvvvv vvvvvvvvvv vvvvvvv vvvvvvvvv vvvvvvvvvvvvvvvvvv

<div align="right">

Vinaya E Patil

Shivani Suryavanshi

Mayur Saner

Bhushan Sarode

Viplav .P.Patil

</div>

Contents

List of Tables

List of Figures

Abstract

Students opting engineering as their disciple is increasing rapidly. But due to various factors and inappropriate primary education in India dropout rates are high. Students are unable to excel in core engineering subjects which are complex and mathematical, hence mostly get drop / keep term (kt) in that subject. With the help of data mining techniques we can predict the performance of students in terms of grades and dropout for a subject. In This project we compares various classification data mining techniques such as nave Bayes, LibSVM, J48, random forest, and JRip and try to choose one of them as per our needs and their accuracy. Based on the rules obtained from this technique(s), we derive the key factors influencing student performance.

Chapter 1

Introduction

In this chapter

1.1 Background

Education is the key to prosperity of any nation. India is one of the fastest growing nation in the world with largest youth of population. Hence in order to build a skilled workforce education becomes necessary. Students are opting for the fields such as engineering, science and technology. Unfortunately due to lack of quality education at primary level, socio-economic, psychological and other diverse factors, students drop out rates are high and performance is low. Hence to improve the quality of engineering graduates such cases of dropout and poor performance must be monitored proactively. Data mining provide us with tools to analyze large set of data to derive meaningful data known as knowledge. This help us to get insight of data and reach to meaningful conclusion. Initially the application of data mining were restricted to business domain but know it is extended to education and is known as EDM. Educational data mining (EDM) deals with the application of data mining tools and techniques to inspect the data at educational institutions for deriving knowledge.

1.2 Motivation

Bakcer and Yacef describes the following four goals of Educational Data Mining (EDM):

- **Predicting student's future learning behaviour:**With the use student modelling ,this goal can be achieved by creating student models that incorporatesthe learner's characteristicks ,including detailed information such as their knowledge ,behaviors and motivations to learn.

- **Discovering or improving domain needs:**Through the various methods and applications of EDM ,discovery of new and improvements to existing models is possible.

- **Studying the effects of educational support:**It can be achieved through learning system.

- **Advancing scientific knowledge about learning and learners:**by learning and incorporating student models, the fields of EDM reaserch and the technology and software used.

1.3   Problem Definition

Students opting engineering as their disciple is increasing rapidly. But due to various factors and inappropriate primary education in India dropout rates are high. With the help of data mining techniques we can predict the performance of students in terms of grades and dropout for a subject. In this project we compares various classification data mining techniques such as nave Bayes, LibSVM, J48, random forest, and JRip and try to choose one of them as per our needs and their accuracy. In this project we are going to use WEKA (Waikato Environment for Knowledge Analysis) version 3.7.4 - an open source software developed by a team of researchers of Waikato University and certified by IEEE. WEKA is a popular suite of machine learning software written in Java, developed at the University of Waikato, New Zealand. The WEKA workbench contains a collection of visualization tools and algorithms for data analysis and predictive modelling, together with graphical user interfaces for easy access to this functionality. It is written in Java and runs cross platform. WEKA supports several standard data mining tasks, more specifically, data preprocessing, clustering, classification, regression, visualization, and feature selection. WEKA provides access to SQL databases using Java Database Connectivity and can process the result returned by a database query. WEKA allows many algorithms giving room for comparison to determine the better classifier among those used for the study.

Based on the rules obtained from this technique(s), we derive the key factors influencing student performance. The results will serve as a guide to the junior student who are just coming to the system to prepare well in courses. The comparative analysis of the results will state that the prediction has helped the week students to improve and concentrate more in some courses which will carry betterment in the result.

1.4   Scope

In this our project we trying to implement software that will provide following advantages over the already implemented software:

1.4.1 Robustness

In a robust system performance degrades gracefully rather than catastrophically as conditions become more different from those under which it is trained.

1.4.2 Portability

Portability to goal of rapidly designing ,developing and deploying system for new application.At present system tend to suffer significant degradation when moved to new task.

1.4.3 Adaption

how can system adapt to changing conditions and improve through use ,adapption can occur at many levels in systems ,sub word models ,pronunciation,language model etc.

1.5 Objective

1.6 Organization of the report

This section species the organization of the project.The chapter one of this project contains the introduction about this project which includes the sections like Background, Motivation,Problem Denation, Scope, Objective, Organization of the report and summary. The System Analysis for the project consists of Literature Survey,summary which is described in the chapter two.Chapter three constitutes of System Requirement Specication including the sections such as Hardware Requirements, Software Requirements, Functional Requirements, Non- Functional Requirements, Other requirement and constraints and summary. The sections System Architecture,UML diagrams(USE Case Diagram, Class Diagram, Sequence Diagram,Component Diagram, Deployment Diagram) and summary are included in chapter four. Thus, the Organization of the report is done in the above manner.

1.7 Summary

In this chapter, an overview of the problem statement along with its solution for the work contained in this dissertation is provided. In the next chapter, related work in the area of communication architecture for disaster rescue operations is presented.

Chapter 2

System Analysis

This chapter is organized as follows. Section **??** highlights the related and useful works that are similar to our work .Discussion of our suggested system is given in section 2.2.In section 2.3 various feasibility aspects are covered.Various risks associated with this projects are given in section 2.4.Finally, summary of the chapter is given in the last section.

2.1   Literature Survey

Since EDM is one of the popular research fields there are numerous papers we have gone through. We hereby discuss some of the works we found most useful for our study.

Mohammed M. Abu Tair, Alaa M. El-Halees in their case study discussed various EDM techniques to improve students performance. Data was collected from the college of Science and Technology Khanyounis for 15years [1993 to 2007]. This data set consists of 3360 record and 18 attribute. They have used various techniques such as association rule mining, classification, outlier detection and clustering to identify the various factors that affects various performance.

S. Agarwal , et al. suggested that placement is based on student performance in qualifying examination and the test. They have used LibSVM algorithm with Radial Basis Kernel, achieving the overall accuracy of around 97.3%. Since placement is one of the most important parameters for quality of education, hence it is immensely necessary that student performance must be improved which is our area of focus throughout the paper.

M.S. Kamal, et al. suggested that the most important factor for dropout are financial conditions, age group and gender. They have used Bayes theorem based on knowledge base to predict the dropout.

Carlos Mrquez-Vera , et al. suggested that the most influential factor for dropout and failure is Poor or Not Presented in Physics and Math; Not Presented in Humanities and Reading and Writing; Poor in English and Social. They have obtained classification results on four cases (1) By using all attributes (2) By using best attributes (3) By using Data Balancing (4)

By using Cost-Sensitive classification. In all of these ADTree was one of the top performers while others where Prism, JRip and OneR.

Mashael A. Al-Barrak , et al. suggested using J48 algorithm to predict final GPA of the student. This paper attempted to find which courses of previous semesters have direct impact on final GPA. In result it was found out that Java1, Database Principles, Software Engineering I, Information security, Computer Ethics, and Project 2 are most important courses affecting the final GPA of the students.

Brijesh and Pal , found out using Bayesian classification that student SSC (metric) grade, living location, medium of instruction, mother qualification, student habits and type of family are the most important factors for the student performance.

Dorina Kabakchieva , demonstrated that J48 performance is the best, followed by the JRip and the k-NN classifier. The Bayes classifiers are found to be less accurate than the rest. However, all tested classifiers has overall accuracy less than 70 % which imply that the error rate is high and the predictions are unreliable.

M.S. Mythili , et al. concludes that the attendance, parent education, locality, gender, economic status are the high potential parameters affecting student performance in examination. It is also found that random forest is the most accurate classifier and take less time to build the model than any other classifier.

Qasem A. Al-Radaideh , et al. in their paper attempt to find out the main parameters which affects the student performance in a particular course. They have used CRISP framework for data mining for this purpose. ID3, C4.5 decision tree and Naive Bayes where compared. C4.5 was found to be better than others. However it was found the classification accuracy of the top three algorithm was not so

2.2 Proposed System

There are various data mining methods such as classification, clustering and association to analyze such data. Classification is supervised learning method that builds a model to classify a data item into a particular class label. The aim of classification is to predict the future outcome based on the current available data. In clustering the data objects are combined into set of objects known as groups or clusters . The objects within a cluster or a group are highly similar to each other but are dissimilar to the objects in other cluster.Dissimilarities and similarities measures are based on the attribute values which describes the objects and often involve distance metrics . Association rule learning involves finding interesting relations between variables in large databases. The aim of association rule learning is to find strong rules in databases based on the various measures of interestingness . Among this we are going to use classification techniques. We have analyzed various classification methods such

as nave Bayes, J48, LibSVM, random forest, JRip for their accuracy on the given set of data. Weka tool used for analysis of data and to build the classification model. Weka provide us with a set of machine learning algorithms which can be used for different data mining tasks. It is an open source tool under GNU license . Weka provide tools for classification, data pre-processing, regression, association rules, clustering and visualization.

The goal of this study is as follows:

- To obtain the most influencing factors that affects students performance.

- To find best classification method for student performance prediction in terms of grade and dropout.

-

2.3   Feasibility study

Once scope has been identied, it is reasonable to ask: Can we build software to meet this scope? Is the project feasible? All too often, software engineers rush past these questions (or are pushed past them by impatient managers or customers), only to become mired in a project that is doomed from the onset. software feasibility has four solid dimensions:Technology-Is a project technically feasible? Is it within the state of the art? Can defects be reduced to a level matching the applications needs? Finance-Is it nancially feasible? Can development be completed at a cost the software organization, its client, or the market can aord?Time-Will the projects time-to- market beat the competition? Resources-Does the organization have the resources needed to succeed?, a project planner must prescribe the time window required for hardware and software and verify that these resources will be available.When a computer-based system (incorporating specialized hardware and software)is to be engineered, the software team may require access to hardware elements being developed by other engineering teams.

2.3.1   Economical Feasibility

This includes an evaluation of all incremental costs and benets expected if proposed system is implemented. Costs-benet analysis which is to be done during economical feasibility delineates costs for project development and weighs them against system benets.The system adds information of colleges and companies for which colleges and companies pays as it provides their information as well as company jobs. So developing this system is economically feasible. when our project will be complete software which if user is using, does not need to

spend extra money for purchasing any type of hardware part hence our project is economic feasible.

2.3.2 Operational Feasibility

When our project will be implemented.Using this application we can predict the performance of students in terms of grades and dropout for a subject. Since our project is graphically strong and it can be easily understood by the user so it is user-friendly. Our project is extensible since it is software and we can do changes in it when we need it.Operational feasibility determines whether the proposed system satised the user objectives and can be tted in to current system operation. The System can be justied as operationally feasible based on the following Operational feasibility determines if the proposed system satised the user objectives and can be tted in to current system operation. The System can be justied as operationally feasible based on the following: The methods of processing and presentation are completely acceptable by the users because they meet all their requirements:

- The users have been involved during the preparation of requirement analysis and design process.

- The system will certainly satisfy the user objectives and it will also enhance their capability

- The system will certainly satisfy the user objectives and it will also enhance their eectively.

2.3.3 Technical Feasibility

It is concerned with hardware and software feasibility. In this study, one has to test whether the proposed system can be developed using existing technology or not. As per client requirements the system to be developed should have speed response because of fast exchange of information, reliability, security, scalability, integration and availability. To meet these requirements.The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system eciently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of condence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the nal user of the system. In this section we have discussed the feasibility study regarding this project.

2.4 Risk Analysis

Uncertainty-the risk may or may not happen; that is, there are no 100 percent probable risks. Loss if the risk becomes a reality, unwanted consequences or losses will occur.When risks are analyzed, it is important to quantify the level of uncertainty and the degree of loss associated with each risk. To accomplish this, dierent categories of risks are considered. Project risks threaten the project plan. That is, if project risks become real, it is likely that project schedule will slip and that costs will increase. Project risks identify potential budgetary, schedule, personnel (stang and organization), resource, customer, and requirements problems and their impact on a software project. Project complexity, size, and the degree of structural uncertainty were also dened as project (and estimation) risk factors. Technical risks threaten the quality and timeliness of the software to be produced. If a technical risk becomes a reality, implementation may become dicult or impossible. Technical risks identify potential design, implementation, interface, verication, and maintenance problems. In addition, specication ambiguity, technical uncertainty, technical obsolescence, and leading edge technology are also risk factors. Technical risks occur because the problem is harder. Business risks threaten the viability of the software to be built. Business risks often jeopardize the project or the product. Candidates for the top ve business risks are:

- Building a excellent product or system that no one really wants(market risk)

- Building a product that no longer ts into the overall business strategy for the company (strategic risk)

- Building a product that the sales force doesnt understand how to sell

- Losing the support of senior management due to a change in focus or a change in people (management risk).

- Losing budgetary or personnel commitment(budget risks)

It is extremely important to note that simple categorization wont always work. Some risks are simply unpredictable in advance. Another general categorization of risks has been proposed by Charette. Known risks are those that can be uncovered after careful evaluation of the project plan, the business and technical environment in which the project is being developed, and other reliable information sources (e.g., unrealistic delivery date, lack of documented requirements or software scope, poor development environment). Predictable risks are extrapolated from past project experience (e.g., sta turnover, poor communication with the customer, dilution of sta eort as ongoing maintenance requests are serviced). Unpredictable risks are the joker in the deck. They can and do occur, but they are extremely dicult to identify in advance.

2.5 Summary

In this chapter brief of literature survey, proposed system,feasibility study and risk analysis is covered. Next chapter presents System Requirement Specification .

Chapter 3

System Requirement Specification

In this chapter, in section 3.1, the hardware requirements of the system is discussed. Software requirements are discussed in Section 3.2. Section 3.3 describes the functional requirements of the proposed system. Section 3.4 describes the non functional requirements.At the end of the chapter summery of whole chapter is given.

3.1 Hardware requirements

- Hard disc : 2GB to 30GB

- RAM : 4 GB

- I/O device: mouse,keybord

3.2 Software requirements

- Ubuntu 14.04 OS

- StaeUml-v2.7.0

- Sharelatex

3.3 Functional requirements

The functional requirements are given as follows:

- To correctly predict the resultant of each student.

- To reduce the run time errors that might occur.

- help to predict the accurate behaviour of student

- to provide students tailored learning pathways or assessments material.

3.4 Non-functional requirements

Non-functional requirements are requirements that specify criteria that can be used to judge the operation of a system, rather than specic behaviors.This should be contrasted with functional requirements that specify specic behavior or functions. In general, functional requirements dene what a system is supposed to do whereas non-functional requirements dene how a system is supposed to be.Non-functional requirements are often called qualities of a system. Other terms for non-functional requirements are constraints, quality attributes, quality goals and quality of service requirements. Qualities,Non-functional requirements, can be divided into two main categories.

- Execution qualities, such as security and usability, are observable at run time.

- Evolution qualities, such as testability, maintainability, extensibility and scalability, are embodied in the static structure of the software system.

3.5 Summary

In this chapter, requirements specifications are highlighted.Next chapter consists of system design involving UML diagrams and system architecture.

Chapter 4

Conclusion and Future Work

Appendix A

Disasters in India

Bibliography