iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** I **Month of publication:** January 2024

DOI: https://doi.org/10.22214/ijraset.2024.58012

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue I Jan 2024- Available at www.ijraset.com

Early Prediction of Student's Performance

Radhika Lagad[1], Saurabh Dhotre[2], Rahul Pise[3], Vedant Chachane[4], Prof. B.C. Tandale[5]
[1, 2, 3, 4]*Students,* [5]*Professor, Department of Computer Engineering, SKN Sinhgad Institute of Technology and Science, Kusgaon(BK), Lonavala, Pune*

Abstract: ***Performance degradation assessment (PDA) is of great significance to ensure safety and availability of mechanical equipment. As an important issue of PDA, the robustness of the trained model directly affects the assessment efficiency and restricts its application in practice. This paper proposes a robust modeling approach based on Student's t-hidden Markov model (Student's t-HMM) and nuisance attribute projection (NAP). NAP can remove nuisance attributes caused by individual differences from the feature space. Student's t-HMM utilizes the finite Student's t-mixture models (SMMs) to describe the observation emission densities associated with each hidden state, which can be more tolerant towards outliers than conventional HMMs. Based on these two techniques, the proposed method is supposed to be more robust and can assess the performance degradation process of new objects based on data of tested objects.***
The prediction of students' academic achievement is crucial to be conducted in a university for early detection of students at risk. This paper aims to present data mining models using classification methods based on Decision Trees (DT) algorithms to predict students' academic achievement after preparatory year, and to identify the algorithm that yields best performance. The students' academic achievement is defined as High, Average, or Below Average based on graduation CGPA.
Keywords: Prediction, Academic Achievement, Decision Tree (DT), J48, Random Tree, REPTree.

I. INTRODUCTION

Employment of graduates students is a problem in Saudi Arabia; only 48% of them are employed [1] . This rate is even larger for technical fields like CS and IT. While this is certainly a multi-dimensional problem, feedback from stakeholders (e.g. Aramco employees that are members of the College Board), and potential employers (workplaces where our students perform their COOP) acknowledged that unemployment is more spread among students with low CGPA. This study uses Data Mining (DM) tools to analyze available data from past batches of students at the College of Computer Science & IT (authors' institution) and extract useful information to explain the phenomena of low CGPA. Machine learning systems offer a lot of potential for assisting instructors in detecting poor student performance by providing an early warning system. As a result, instructors can devote more time to such struggling pupils in order to prepare them for summative tests. To determine the prediction accuracy, we used different machine learning algorithms on the historical results of a course given in a bachelor's in computer information systems programme. These models will be utilised on future students' formative exams, and if the model predicts that a student is more likely to fail a course, alternative educational tactics will be applied to improve his or her learning experience. The following part discusses relevant work, followed by a problem statement, explanation of the experiment specifics and findings, and finally, a conclusion Employment of graduates students is a problem in Saudi Arabia; only 48% of them are employed [1] . This rate is even larger for technical fields like CS and IT. While this is certainly a multi-dimensional problem, feedback from stakeholders (e.g. Aramco employees that are members of the College Board), and potential employers (workplaces where our students perform their COOP) acknowledged that unemployment is more spread among students with low CGPA. This study uses Data Mining (DM) tools to analyze available data from past batches of students at the College of Computer Science & IT (authors' institution) and extract useful information to explain the phenomena of low CGPA. The student-centered learning method advocates for ensuring that students have a positive learning experience. As a result, it's vital for instructors to keep track of their students' progress and adjust their instructional tactics accordingly. As a result, formative assessments have become an important tool for teachers to evaluate the efficiency of the learning process.

II. OBJECTIVE

1) Calculate Student Performance using Machine learning algorithm
2) Need of keeping track of user search results to enhance the process.
3) To Predict Student performance using Machine learning Technique.
4) To classify dataset using Support vector machine Algorithm.

©IJRASET: All Rights are Reserved

5) To increase the Academic achievement level of each students.
6) To the our System provide performance in early.
7) Easy to use or handle
8) To examine the impact of sport on academic

III. LITERATURE REVIEW

Sr No	Publish-cation detsils	Year	Author	Key Points	Research gap identified
1.	A Robust Performance Degradation Modeling Approach Based on Student's t-HMM and Nuisance Attribute Projection	11 March 2020	HUIMING JIANG 1 , JING YUAN 1 , QIAN ZHAO 1 , HAN YAN 2 , SEN WANG3 , AND YUNFEI SHAO	Robustness, performance degradation assessment, student's t-HMM, nuisance attribute projection, bearings.	Use Degardation modeling approach
2.	. Using Machine Learning Techniques to Earlier Predict Student's Performance	31 January 2019	Evawaty Tanuar; Yaya Heryadi; Lukas; Bahtiar Saleh Abbas; Ford Lumban Gaol	The techniques used in this experiment are Generalized Linear Model, Deep Learning and Decision Tree	In this paper use Decision Tree
3.	Mulyankan: A prediction for student's performance using Neural Network	04 May 2015	Pooja Pathak; Neha Bansal; Shivani Singh	Artificial Neural Networks ,ML	Use ANN algorithm
4.	Data Mining Analysis on Student's Academic Performance through Exploration of Student's Background and Social Activities	11 March 2020	Ching-Chieh Kiu	Student Performance, Educational Data Mining, Decision Tree, Naïve Bayesian, Neural Network	Use Data Mining

IV. SYSTEM DESIGN

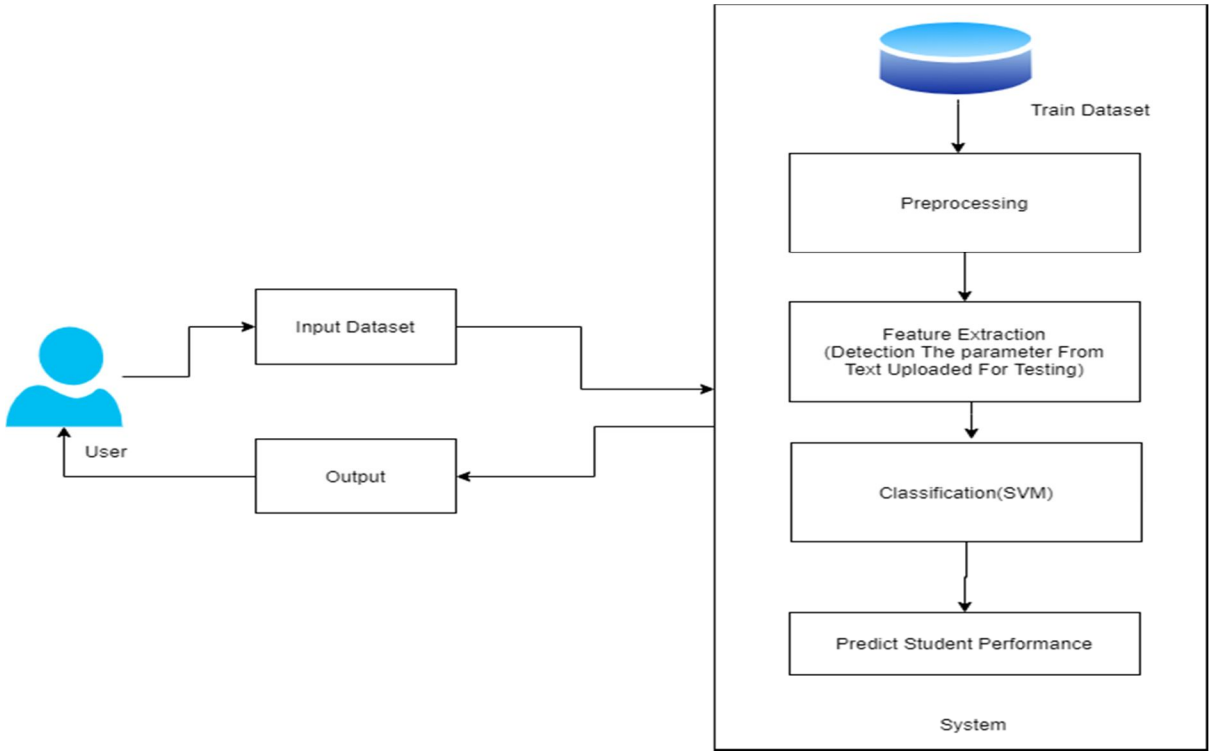


Fig 1: System Design

V. CONCLUSION

In conclusion, This research focused on the predictive ability of DM methods to predict students' achievement after preparatory year at the degree level in higher education. The students' achievement is based on the Grade Point Average (CGPA) defined as (high, average, or under average). Throughout the experiment, we have implemented three SVM classifiers; J48, RT on the student dataset to predict the achievement of the student at graduation year. The results showed that the J48 classifier outperforms predicting students' achievement with reasonable accuracy of 69.3%. Moreover, the important features that had a significant impact on predicting academic achievement of CCSIT students were; CGPA for Prep year, Computer Skills course, Communication Skills course, Mathematics course. The results obtained will help to predict students' final achievement early enough to take effective countermeasures by providing timely warnings to students. Thus, the percentage of students who have low achievement can be reduced providing the right counseling.

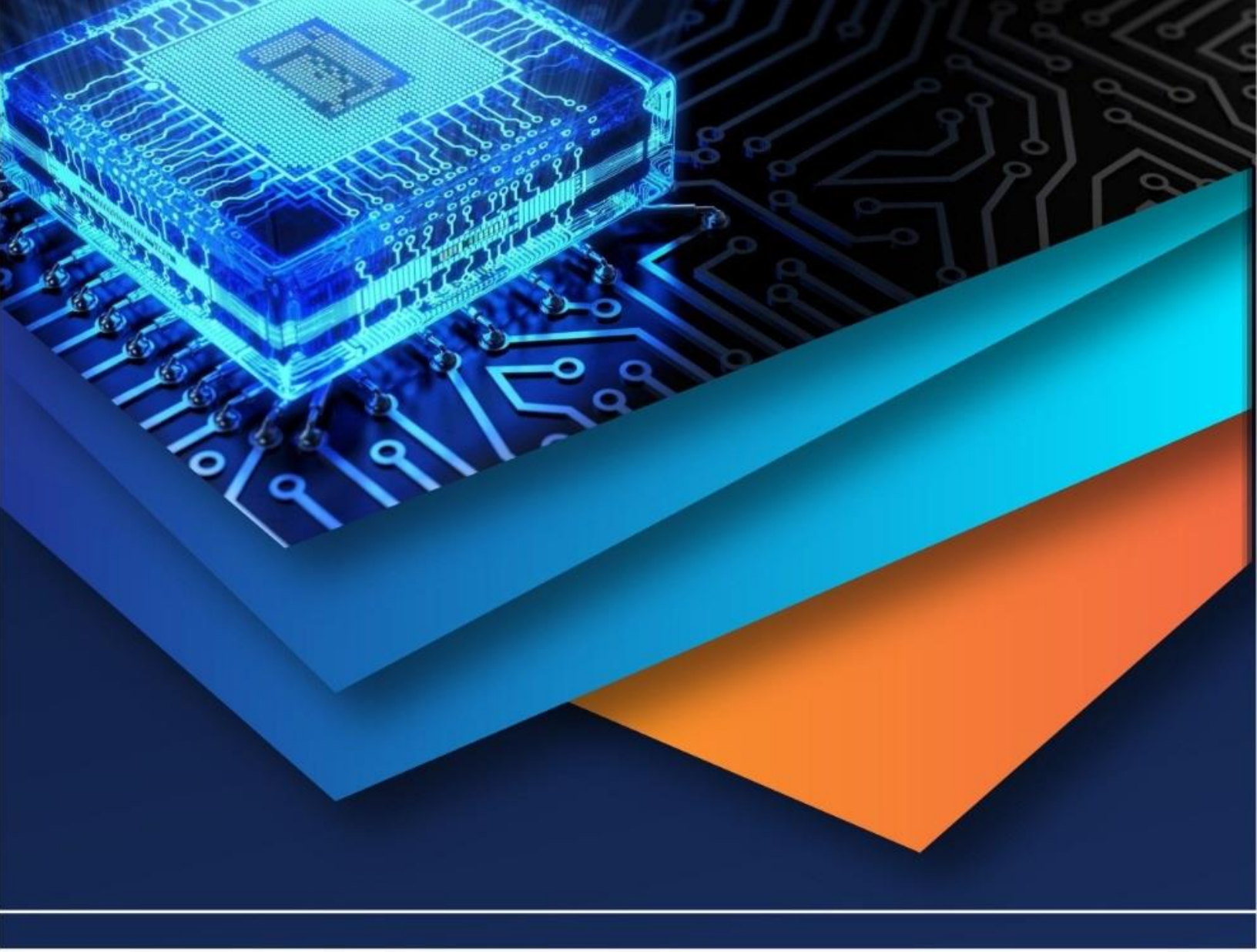
VI. ACKNOWLEDGMENT

We felt great pleasure in submitting this paper on Early Prediction of Student's Performance A huge thank you to Prof. B.C. Tandale , for your supreme support, guidance, and patience. We would like to express our sincere gratitude and appreciation to all our colleagues who have helped us in one way or another in the writing of this research paper.

REFERENCES

[1] University disciplines .. and the structure of the labor market _ Economic newspaper," 2019. [Online]. Available: http://www.aleqt.com/2018/07/16/article_1420651.html. [Accessed: 30-Oct-2019].
[2] N. A. Yassein, R. G. M Helali, and S. B. Mohomad, "Predicting Student Academic Performance in KSA using Data Mining Techniques," J. Inf. Technol. Softw. Eng., vol. 07, no. 05, 2017.
[3] A. Mueen, B. Zafar, and U. Manzoor, "Modeling and Predicting Students' Academic Performance Using Data Mining Techniques," Int. J. Mod. Educ. Comput. Sci., vol. 8, no. 11, pp. 36–42, 2016.
[4] H. Almarabeh, "Analysis of Students' Performance by Using Different Data Mining Classifiers," Int. J. Mod. Educ. Comput. Sci., vol. 9, no. 8, pp. 9–15, 2017.
[5] M. Al-Saleem, N. Al-Kathiry, S. Al-Osimi, and G. Badr, "Mining Educational Data to Predict Students' Academic Performance," Springer, Cham, 2015, pp. 403–414.
[6] R. Asif, A. Merceron, and M. K. Pathan, "Predicting Student Academic Performance at Degree Level: A Case Study," Int. J. Intell. Syst. Appl., vol. 7, no. 1, pp. 49–61, 2015.
[7] R. O. Aluko, E. I. Daniel, O. Shamsideen Oshodi, C. O. Aigbavboa, and A. O. Abisuga, "Towards reliable prediction of academic performance of architecture students using data mining techniques," J. Eng. Des. Technol., vol. 16, no. 3, pp. 385–397, Jun. 2018.
[8] M. A. Al-barrak and M. Al-razgan, "Predicting Students Final GPA Using Decision Trees : A Case Study," Int. J. Inf. Educ. Technol., vol. 6, no. 7, 2016.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)