IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 7.105 ⁜ Vol. 9, Issue 4, April 2022

DOI: 10.17148/IARJSET.2022.9477

An Experiment to Determine Student Performance Prediction using Machine Learning Algorithm

Prachi Salve[1], Utkarsh Howale[2], Sandeepkumar Vishwakarma[3] Amol Nimse[4]

[1]Professor, Department of Computer Engineering, D.Y Patil School of Engineering Academy,Ambi

[2,3,4]Students, Department of Computer Engineering, D.Y Patil School of Engineering Academy,Ambi.

Abstract: In the current scenario, this is difficult to predict students' future results based on his/her current performance. As the outcome of this, the teacher can advise him/her to overcome the poor result, and also it can coach the student. By finding out the dependencies for final examinations. The system suggests to students about subject/course selection for the upcoming semester and act as roles of adviser/teacher. Due to improper advice and monitoring a lot of student's futures in dark. This is difficult for a teacher to analyze and monitors the performance of each and every student. The system can give feedback to teachers about how to improve student performance. This paper carried out a literature review from the year 2003 to 2021. The system predicts his/her future results by applying Machine Learning Algorithms like k-Nearest Neighbor (k-NN), Support Vector Machine (SVM), and Naive Bayes at an earlier stage.

Keywords: SVM , Dataset, ML, Training Module.

I. INTRODUCTION

Predicting automated student performance is an important task due to the large amount of data in the educational database. This job is being looked after by the Educational Data Mining (EDM). EDM develops methods to detect data obtained from the educational environment. These methods are used to understand students and their learning environment. Educational institutions are often curious about how many students will pass / fail for the required number of students. Previous studies have shown that many researchers focus on choosing the right algorithm for the right classification and neglect to solve problems that occur during the data mining phase, such as high data measurement, class imbalances, and classification errors. Reducing the accuracy of the model reduced the problems.

Many well-known classification algorithms have been implemented in this domain, but this paper proposed a model of student performance estimates based on the tree classification of supervised learning decisions. In addition, an integrated method is applied to improve the efficiency of the classifier. Ensemble Methods Approach has been developed to solve classification, prediction problems.

II. LITERATURE SURVEY

[1] Automatic Student performance prediction is a crucial job due to the large volume of data in educational databases. This job is being addressed by educational data mining (EDM). EDM develop methods for discovering data that is derived from educational environment. These methods are used for understanding student and their learning environment. The educational institutions are often curious that how many students will be pass/fail for necessary phases such as data high dimensionality ,class imbalance and classification error etc. Such types of problems reduced the accuracy of the model. Several well-known classification algorithms are applied in this domain but this paper proposed a student performance prediction model based on supervised learning decision tree classifier. In addition, an ensemble method is applied to improve the performance of the classifier. Ensemble methods approach is designed to solve classification, predictions problems. This study proves the importance of data preprocessing and algorithms fine- tuning tasks to resolve the data quality issues. The experimental dataset used in this work belongs to Alentejo region of Portugal which is obtained from UCI Machine Learning Repository. Three supervised learning algorithms (J48, NNge and MLP) are employed in this study for experimental purposes. The results showed that J48 achieved highest accuracy 95.78% among others..arrangements. In previous studies, it has been observed that many researchers have intension on the selection of appropriate algorithm for just classification and ignores the solutions of the problems which comes during data mining recognition systems will be done.It will improve the performance of the legitimate traffic.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 7.105 ⁜ Vol. 9, Issue 4, April 2022

DOI: 10.17148/IARJSET.2022.9477

[2] This paper aims to cut back the manual procedures concerned within the performance analysis and analysis of scholars, by automating the method right from retrieval of results to pre-processing, segregating, and storing them into information. We additionally expect to perform examination on immense measures of information viably and encourage simple recovery of different sorts of data identified with understudies' execution. We give a degree to build up to information stockroom wherein, we can apply information mining methods to perform different sorts of examinations, making a learning base and use it further, for forecast purposes

[3] For a productive and a good life, education is a necessity and it improves individuals' life with value and excellence. Also, education is considered a vital need for motivating self-assurance as well as providing the things are needed to partake in today's World. Throughout the years, education faced a number of challenges. Different methods of teaching and learning are suggested to increase the learning quality. In today's world, computers and portable devices are employed in every phase of daily life and many materials are available online anytime, anywhere. Technologies like Artificial Intelligence had a surprising evolution in many fields especially in educational teaching and learning processes. Higher education institutions have started to adopt the use of technology into their traditional teaching mechanisms for enhancing learning and teaching. In this paper, two datasets have been considered for the prediction and classification of student performance respectively using five machine learning algorithms. Eighteen experiments have been performed and preliminary results suggest that performances of students might be predictable and classification of these performances can be increased by applying pre-processing to the raw data before implementing machine learning algorithms.

[4] Predicting students' performance is one of the most important topics for learning contexts such as schools and universities, since it helps to design effective mechanisms that improve academic results and avoid dropout, among other things. These are benefited by the automation of many processes involved in usual students' activities which handle massive volumes of data collected from software tools for technology-enhanced learning. Thus, analyzing and processing these data carefully can give us useful information about the students' knowledge and the relationship between them and the academic tasks. This information is the source that feeds promising algorithms and methods able to predict students' performance. In this study, almost 70 papers were analyzed to show different modern techniques widely applied for predicting students' performance, together with the objectives they must reach in this field. These techniques and methods, which pertain to the area of Artificial Intelligence, are mainly Machine Learning, Collaborative Filtering, Recommender Systems, and Artificial Neural Networks, among others.

III. PROPOSED SYSTEM

The main purpose behind this project is to implement a system based on Desktop application to predict the student performance. So one Desktop application based on machine learning is used to predict the performance of student to get selected in company or need of classes to improve student chances to be get selected in company.

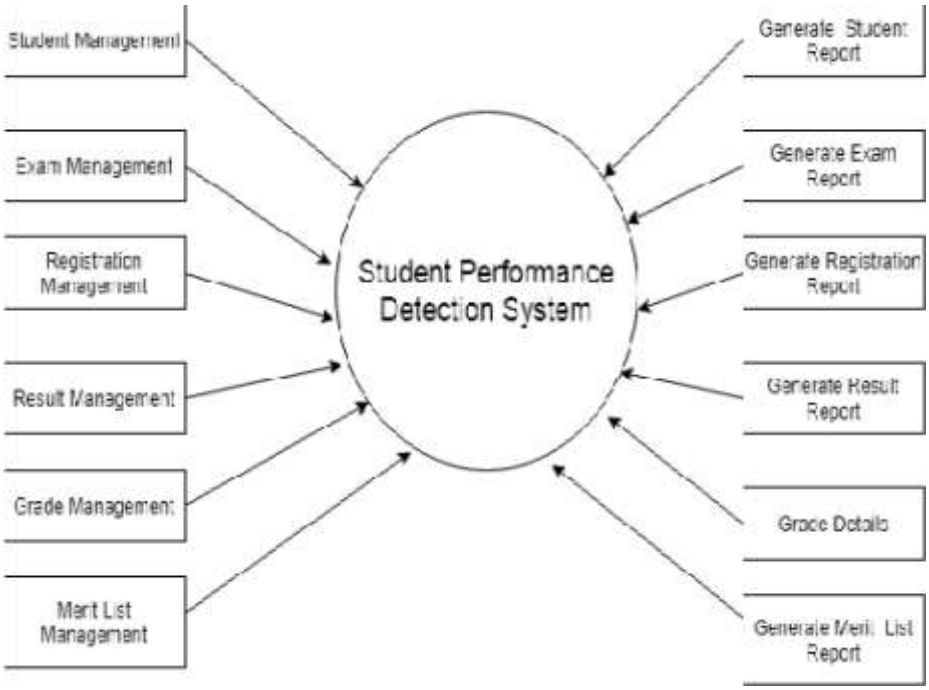
- Students-: Enter previous year marks for performance detection. Or Enter 10th or 12th marks for guidance.
- Teacher -: Enter particular student marks to checking students performance

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 7.105 ⁜ Vol. 9, Issue 4, April 2022

DOI: 10.17148/IARJSET.2022.9477



IV. DATA

We collect student's data from university or collage to predict performance of student

V. ALGORITHM

5.1 SVM

We are using Support Vector Machine (SVM) in our project to detect predator. It is a supervised machine learning model that divides dataset into different classes on hyperplane which is used to find maximum margin. We'll feed labeled data to train our model, in prediction phase labeled data will get matched with new data with the help of the SVM algorithm in order to give desired output.

VI. RESULTS

We implemented system for students 10th,12th, and Engineering students. We implemented some module-:

1. Students Registration: In this module students who want to check there performance they first have to registered with us with few information like Name, mail, contact no

2. Students Login: In this module we will check whether students is valid or not.

3. Submit Marks: In this module we will take students marks of 10th,12th, and engineering students and submit our training module to predication of performance

4. Result: In this module we will show two types of result if student's performance is low then we will show the solution to students for improvement. Another case if student's performance is good then we will show the placement result of students.

VII. CONCLUSION

In this paper present successfully implemented shows that academic performances of the students are primarily dependent on their past performances. Our system predicate students performance and placement of students. Further, we confirmed that the performance of neural networks increases with increase in dataset size. Machine learning has come far from its nascent stages, and can prove to be a powerful tool in academia. In the future, applications similar to the one developed, as well as any improvements thereof may become an integrated part of every academic institution.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 7.105 ⁜ Vol. 9, Issue 4, April 2022

DOI: 10.17148/IARJSET.2022.9477

REFERENCES

[1]. S. Kotsiantis, C. Pierrakeas, and P. Pintelas, "Preventing student dropout in distance learning systems using machine learning techniques," AI Techniques in Web-Based Educational Systems at Seventh International Conference on Knowledge-Based Intelligent Information & Engineering Systems, pp. 3-5, September 2003.

[2]. Bhavesh Shah1, Tushar Nimse2, Vikas Choudhary3, Vijendra Jadhav4. " A Review on Students Performance Prediction using Machine Learning Algorithms", International Journal of Computer Science and Information Security (IJCSIS), Vol. 9, No. 4, pp. 136-140, 2011.

[3]. ErkanEr. "Identifying At-Risk Students Using Machine Learning Techniques", International Journal of Machine Learning and Computing, Vol. 2, No. 4, pp. August 2012.Alaa el-Halees, "Mining Students Data to Analyze elearning Behavior: A case Study", 2009.

[4]. Khalid Alkhatib, Hassan Najadat, Ismail Hmeidi and Mohammed L. Ali Shatnawi, "Stock price Prediction Using K-Nearest Neighbor (knn)

[5]. Algorithm" Vol. 3 No. 3; March 2013

[6]. NafisNeehal, Book-"Machine Learning Algorithm", 2018(Bangla), Page- 132, ISBN: 978984-8042-02-1.

[7]. Varapron P. et al. Using Rough Set theory for Automatic Data Analysis. 29th Congress on Science and Technology of Thailand. 2003.

[8]. Merceron, A. and Yacef, K.,"Educational Data Mining: a Case Study" In Proceedings of the 12th International Conference on Artificial Intelligence in Education AIED 2005, Amsterdam , The Netherlands, IOS Press. 2005.

[9]. Romero, C., Ventura, S. and Garcia, E., "Data mining in course management systems: Moodle case study and tutorial". Computer & Education. Vol. 51, No 1. pp. 368384. 2008

[10]. Minaei-Bidgoli B., Kashy, D. Kortemeyer G., Punch W., "Predicting Student Performance: An Application of Data Mining Methods with an Educational Web-Based System". In the Processing of 33rd ASEE/IEEE conference of Frontiers in Education. 2003.

[11]. Beikzadeh,M. and Delavari, N., "A New Analysis Model for Data Mining Processes in Higher Educational Systems". On the proceedings of the 6th Information Technology Based Higher Education and Training 7-9 July 2005.

[12]. Waiyamai,K. "Improving Quality of Gradate Students by Data Mining" Department of Computer Engineering. Faculty of Engineering. KasetsartUniversity , Bangkok, Thailand. 2003.

[13]. International Journal of Computational Intelligence Research ISSN 0973- 1873 Volume 13, Number 7 (2017), pp. 1735-1741 © Research India Publications, http://www.ripublication.com.

[14]. Amjad Abu Saa. "Educational Data Mining & Students' Performance Prediction". (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 7, No. 5, 2016.

[15]. Keno C. Piad, MenchitaDumlao, Melvin A. Ballera, Shaneth C. Ambat," Predicting IT Employability Using Data Mining Techniques," in third International Conference on Digital Information Processing, Data Mining, and Wireless Communications (DIPDMWC), 2016.

