



**IJIRCCCE**

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 12, December 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 8.379**



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

# Survey on Prediction of students' Academic Performance Based on Educational Data Analysis

Varad Dake, Varun Bankar, Krishna Dubbawar, Datta Chilme, Prof. Pradnya kasture

Department of Computer Engineering, RMD Singhad School of Engineering Warje, India

**ABSTRACT:** Education plays a pivotal role in producing qualified human power that accelerates economic development and solves the real problems of a community. Students are also expected to spend much of their time on their education and need to graduate with good academic results. However, the trend of graduating students is not proportional to the trend of enrolled students and an increasing number of students commit readmission, suggesting that they did not perform well in their academics. Thus, the study aimed to identify the determinants of academic performance among university students.

**KEYWORDS:** Data mining, Performance analysis, Machine Learning.

## I. INTRODUCTION

Education is regarded as a promoter of human development and seen by many to be in the centre of any society's life and concern. It is a social artifact embodying aspirations about the welfare and development of the society it deems to serve. To Botswana, education is expected to contribute towards the social, cultural, political and economic welfare and development of citizens (RNPE, 1994). According to Botswana educational goals, children who complete secondary education are expected to have acquired lifelong skills and be competitive in the global village when it comes to their employability (RNPE, 1994). This therefore, calls for students to excel academically or hopefully perform to the satisfaction of the nation. In Botswana basic education is free to all children. The government is the sole sponsor for the education of the students from primary to secondary school levels. To some they receive government sponsorship at tertiary level. Since government committed itself to provide basic education for all, the Ministry of Education and Skill Development has been receiving a lion's share in both recurrent and development budget. Since 2007/2008 budget the Ministry of Education and Skill Development has been allocated over P5 billion of the recurrent budget. The 2013/2014 budget the Ministry of Education and Skill development is allocated P7.93 billion or 22.98 per cent of the ministerial recurrent budget. Considering government hefty investment in education, its output with regard to the quality of students has not been commensurate with the expenditure. The students' academic performance has been declining at an alarming rate since 2010. Table 1 below shows yearly students' academic performance for 2010, 2011 and 2012, which indicate a serious decline. This has caused a concern for both the government and the public.

## II. RELATED WORK

Student's performance in the educational process can literally be defined as something that is obtained from changes in the behavior of students based on their experiences, besides that learning outcomes are also a realization of the potential or capacity possessed by students [1]. These learning outcomes from students can be seen from their behavior, both behavior in the form of understanding knowledge, thinking skills, or motor skills [2]; an outcome of the process of changing student behavior after attending lessons [3]. The concrete form of student's performance can be seen from their understanding of the knowledge being studied, their expertise in processing information and making decisions based on certain thoughts or motor skills [4]. Based on those understandings, student's performance can be observed and measured in the realm of students' knowledge, attitudes and skills after following a series of lessons. Student's performance depends on the teaching and learning process they go through, so that learning outcomes can be used as considerations in improving the quality of the learning process. On the other hand, a similar terminology is learning achievement which is a measure of student achievement after participating in learning activities in the form of an assessment scale (either letters, numbers or certain symbols [5]. Giving a weight or rating for student's achievement in learning requires the preparation of suitable assessment indicators, and needs to be ensured of the validity and the reliability [6]. This value can then be used as a description of student's performance in a certain period of time [7].

Student's performance is obtained after passing various measurements (in various forms of assessment) after students carry out several learning processes.

### III. EXISTING SYSTEM/OPEN ISSUES:-

1. Low Accuracy Detected
2. Limited dataset used

### IV. CONCLUSION

The system focuses on the student academic growth analysis using machine learning techniques. For analysis Decision tree and random forest classifier are used. This process can help the instructor to decide easily about performance of the students and schedule better method for improving their academics. In future additional features are added to our dataset to acquire better accuracy.

#### Acknowledgement

Express my true sense of gratitude, sincere and sincere gratitude to my guide to the project **Prof.Pradnya Kasture** for his precious collaboration and guidance that he gave me during my research, to inspire me and provide me with all the laboratory facilities, this it allowed me to carry out this research work in a very simple and practical way. I would also like to express my thanks to our coordinator, **Prof.Vina Lomte,HOD.** and **PrincipleDr.Vaibhav Dixit** and all my friends who, knowingly or unknowingly, helped me during my hard work.

### REFERENCES

- [1] N.V.Krishna Rao, Dr.N.Mangathayaru, Dr.M.Sreenivasa Rao," Evolution and Prediction of Radical MultiDimensional E-Learning System with Cluster based Data Mining Techniques", International Conference on Trends in Electronics and Informatics,2017, PP.701-707.
- [2] Pushpa S.K, Manjunath T.N, "Class result prediction using machine learning", InternationalConference On Smart Technologyfor Smart Nation,2017,pp1208- 1212. Micheal Bowles, Machine Learning in Python: Essential Techniques for Predictive Analysis. John Wiley Sons, Inc. 2015.
- [3] TrishulChilimbi, Yutaka Suzue, Johnson Apacible, and KarthikKalyanaraman. Project Adam:Building an efficient and scalable deep learning training system. In 11th USENIX Symposium on Operating Systems Design and Implementation (OSDI 14), pages 571–582, 2014.
- [4] Jack Clark. Google turning its lucrative web search over to AI machines, 2015. [www.bloomberg.com/news/articles/2015-1026/googleturning- its-lucrative-websearch-over- to-aimachines](http://www.bloomberg.com/news/articles/2015-1026/googleturning- its-lucrative-websearch-over- to-aimachines).
- [5] J. Xu, K. H. Moon, and M. Van Der Schaar, "A Machine Learning Approach for Tracking and Predicting Student Performance in Degree Programs," IEEE J. Sel. Top. Signal Process., vol. 11, no. 5, pp. 742–753, 2017.
- [6] K. P. Shaleena and S. Paul, "Data mining techniques for predicting student performance," in ICETECH 2015 - 2015 IEEE International Conference on Engineering and Technology, 2015, no. March, pp. 0–2.
- [7] M. Shahiri, W. Husain, and N. A. Rashid, "A Review on Predicting Student's Performance Using Data Mining Techniques," in Procedia Computer Science, 2015.
- [8] Y. Meier, J. Xu, O. Atan, and M. Van Der Schaar, "Predicting grades," IEEE Trans. Signal Process. vol. 64, no. 4, pp. 959–972, 2016.
- [9] P. Guleria, N. Thakur, and M. Sood, "Predicting student performance using decision tree classifiers and information gain," Proc. 2014 3rd Int. Conf. Parallel, Distrib. Grid Comput. PDGC 2014, pp. 126–129, 2015.
- [10] P. M. Arsad, N. Buniyamin, and J. L. A. Manan, "A neural network students' performance prediction model (NNSPPM)," 2013 IEEE Int. Conf. Smart Instrumentation, Meas. Appl. ICSIMA 2013, no. July 2006, pp. 26–27, 2013.



**INNO**  **SPACE**  
SJIF Scientific Journal Impact Factor  
**Impact Factor: 8.379**



**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
**INDIA**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 **9940 572 462**  **6381 907 438**  **ijircce@gmail.com**



[www.ijircce.com](http://www.ijircce.com)

Scan to save the contact details