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ANALYSIS OF STUDENT PERFORMANCE USING DEEP LEARNING APPROACHES FOR OUTCOME BASED EDUCATION

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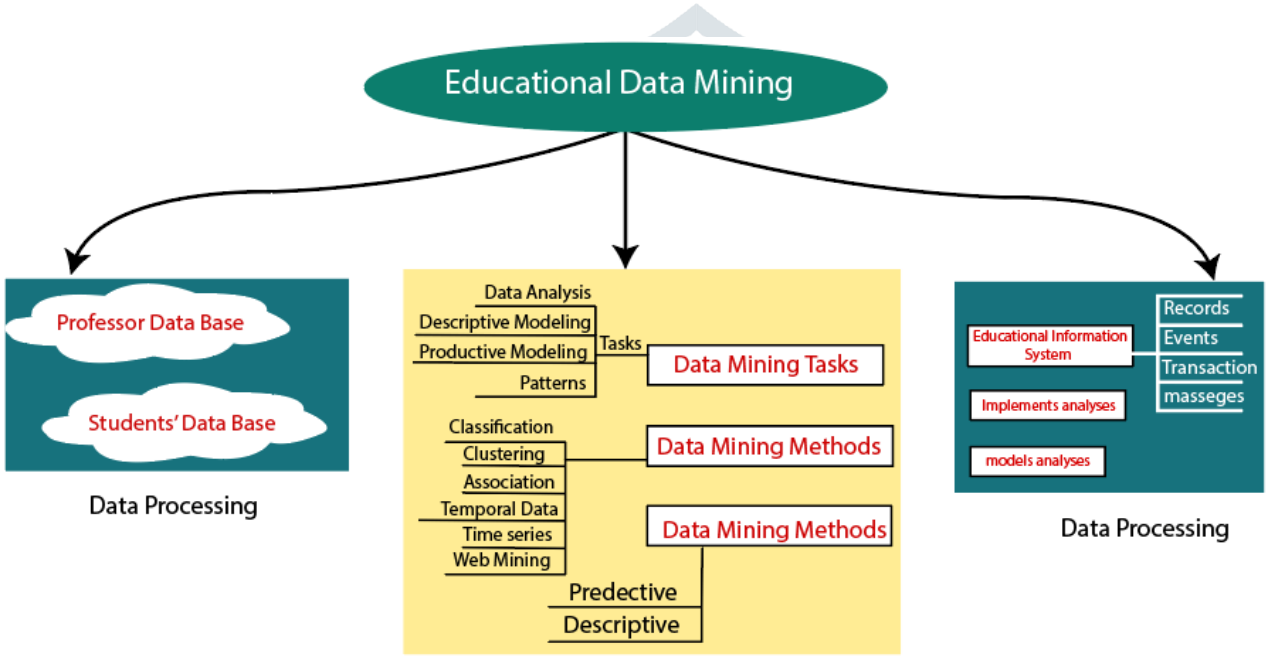
ABSTRACT

The analysis of student performance based on the Program outcomes, Course Learning outcomes, Assessment, and course is known as outcome-based education (OBE). Predicting and analyzing performance based on deep learning algorithms can benefit from data analysis. This makes it easier to combine student performance with program and learning outcomes and to classify them according to quality indicators, which show how much of a goal is accomplished through studying. Graduates from educational institutions ought to be prepared to deal with technological advancement. Outcome-Based Education (OBE), which includes OBE-based curriculum development, teaching and learning process assessment, and Program Educational Objectives (PEO), is the only way to meet the challenges of the future. PEO, PO, PSO, and CO are the most common buzzwords for OBE. The findings of this study demonstrate the significance of OBE in today's educational system for achieving the desired outcomes. Based on Outcome-Based Education (OBE) and the specific program educational objectives and outcomes, the primary objective of this paper is to examine the performance of the students. However, these analyses only take into account the students' academic performance. For a better prediction, an adaptive approach that takes into account the student's personal characteristics as well as academic data can be used. It is possible to obtain accurate predictions and more significant analyses by utilizing various data mining algorithms. A student performance prediction model based on the DSN neural network model and the Deep Learning Model Using the OBE Framework was proposed in this work. Profound learning based strategy is applied to work on the exhibition of the classifier. This study demonstrates the significance of data preprocessing, which resolves issues with data quality. A comparison of OBE module experimental results and data analysis for OBE is presented in this paper. For a comprehensive examination of the OBE-based implementation, the experimental results include predictive, data, and comparative analyses of student performance.

Keywords: Deep learning, Outcome Based Education, DSN

1. Introduction

The goal of outcome-based education is for students to be able to identify and comprehend the particular course work in accordance with the program outcomes (PO) and learning outcomes (LO). The OBE system is widely used and accepted. In the teaching process, conceptual learning is more important. A lot of modules are included in outcome-based education to help students understand the entire course. Each module must be successfully completed to complete the course work. In addition to classroom instruction, students acquire an in-depth understanding of the course material through videos, group discussions, and quizzes. The projects on the various subjects are provided to enhance conceptual understanding and practical experience. The evaluation procedure is rather complicated in order to obtain the most accurate results because of the outcome-based education's indirect learning approach.



Student Performance Evaluation in Educational Data Mining

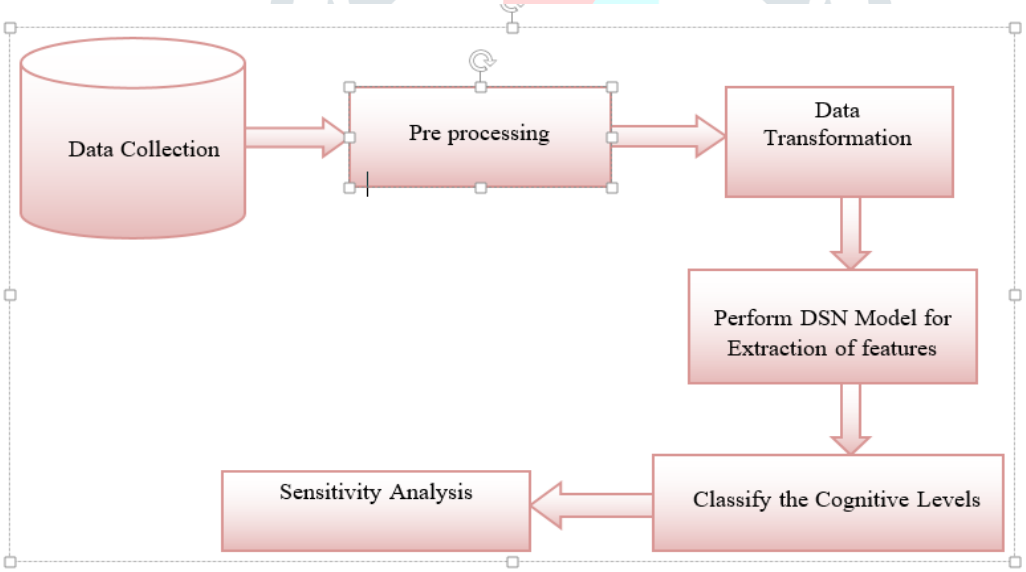
The students' dataset is used for the purpose of the experiment. There are three distinct sources used to create the numerical datasets. The internal score serves as the primary source for this research. Internal consists of a course framework with a mapping of the program's and course's outcomes, as well as internal score data from the instructors' respective courses, such as continuous internal assessments, assignments, extracurricular activities, online tests, practicals, and seminars, among other things. Second, data from external assessments will be gathered from the examination controller. At long last, Overview and Criticism was gathered from active understudies and input will be gathered from graduates and managers.

Based on the optimum value indicating the student's high competence levels, the measured score of all three components indicates the psychological levels of the optimum value. Based on the cluster value of three positions of selection, repetition, and modularity, it appears that only two-thirds of students reached any cognitive level. By comparing the results of the directive evaluation tool to those of the manual evaluation, the results of the directive evaluation tool were also confirmed. The rule-based and expert judgment approaches to evaluation are contrasted in this paper. The proportion of students who meet the threshold values

is the subject of both methods' evaluations. The competency level has reached higher concentration if the threshold value is higher than the optimal value. The evaluation criteria became more complicated in the event that the competency degree level was low. In order to improve the OBE Framework analysis's classification, the p-value ought to be optimized

PROPOSED FRAMEWORK

Using various deep learning algorithms, a predictive and comparative analysis of the student's performance based on academic and personal behavior data is carried out to identify the most accurate algorithm. Academic and personal information (student characteristics) would make up the student dataset. The various deep learning algorithms would be used to analyze student performance in a predictive and comparative manner. The prediction of SPI and behavioral analysis, would be the outcome of the predictive analysis. The deep learning algorithm with the highest level of precision would be used in the comparative analysis. Deep Stacking Network (DSN) is an unlimited design planned to empower bundles and advantage from the profound information capacities of neural nets.The following five objectives have been selected for the purpose of the experimental data analysis: Prediction of the result and comparative analysis of algorithms for accurate prediction, comparison between learning management systems with an adaptive approach, analysis of the quality of education using student feedback, and (1) identify the frequent subjects that are the causes of low academic performance.



Conclusion

In this paper, we implemented the application based on the collected data. The collected data is taken for the input and the results shows the outcome analysis of each course shows the calculation of the attainment target for the particular course by each student. The calculation is purely based on student’s mark attainment in each course outcomes. For each outcome, 3 scale rubrics will be followed, Level 1: 50% of students secured greater than 50% marks. Level 2: 60% of students secured greater than 50% marks.Level 3: 70% of students secured greater than 60% marks. After calculation of the attainment level, that is mapped with programme outcome for final attainment calculation. Final calculation of the course attainment is considered by University / End

semester exam is 80% and remaining 20% is internal assessment components.The proposed algorithm attains better classification accuracy of cognitive level of students.

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