


Chapter 8

A Machine Learning Model for Advanced Decision Making in Smart Education Systems

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ABSTRACT

A smart education system uses emerging technologies and generates a vast amount of heterogeneous data in the learning environment. The conventional methods presently used by the educational administrators for decision-making are minimal and take more time to generate the results. The educational administrators could not be able to predict the results quickly and advance for better decision-making. Today, artificial intelligence approaches are widely used in educational systems for automating educational processes. These approaches achieve a better, efficient, and effective modern education system. Integrating machine learning deep learning techniques with a smart education system can automatically analyze the generated data for better decision-making and provide recommendations to students and educational administrators. This chapter aims to introduce a machine learning model to predict the outcomes in a smart education system.

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INTRODUCTION

Recently, in the education sector, smart education has led to an increased economy in e-Learning environments. Technology has become commonplace in the current educational scenario. Leveraging technology in the classroom enhances teaching and the overall learning experience (Vinati Kamani, 2019). Access to technology has transformed the very conventional education system functions. Emerging technologies, like Artificial Intelligence, Big Data analytics, cloud computing, Augmented and Virtual Reality, lead to a transformation of educational models and completely reimagine the way students approach learning.

The intelligent education system uses emerging technologies, including advanced learning management systems (LMS), modern learning platforms, and learning analytics that can capture streams of fine-grained teachers and learner behaviors. The smart education system uses various tools and techniques to operate on educational data and provide multiple stakeholders with feedback to improve teaching, learning, and educational decision-making.

Nowadays, the speed of access to information and the massive amount of data produced, alongside the expanding use of Web-based technologies, are hastily increased. The smart education system (also called innovative or intelligent) is not an exception organizing and classifying precisely those generated information is hugely beneficial as it minimizes the resources needed to reuse and process content for learners and tutors.

With advances in modern learning systems, possibilities exist to harness the power of feedback loops at the level of individual teachers and students. Measuring and making visible students' learning and assessment activities open up students' possibility to develop skills in monitoring their learning and directly seeing how their effort improves their success. Teachers gain views into students' performance that help them adapt their teaching or initiate interventions in tutoring, tailored assignments, and the like. Modern learning systems enable educators to quickly see the effectiveness of their adaptations and interventions, providing feedback for continuous improvement.

Motivation

Transforming Information Technology (IT) systems for educational applications has become imperative in a rapidly evolving global scenario. Today, educational institutions provide transparency, confidentiality, information security, educational data quality for monitoring, and advanced predictive capabilities services to society. Educational organizations need to consistently meet these objectives in the ordinary course as also during crisis scenarios.

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