STUDENT ENROLMENT PREDICTION

Somil Nautiyal
Department of Computer Engineering
Chandigarh University
Punjab, India
somilnautiyal118@gmail.com

Nitish Agarwal
Department of Computer Engineering
Chandigarh University
Punjab, India
agarwalnitish121@gmail.com

Tanishq Garg
Department of Computer Engineering
Chandigarh University
Punjab, India
tanishqgarg27@gmail.com

Abstract: **In a world full of tech geeks, new developments in the department of IT is like day-to-day household chores. Moreover, these developments combined with altruistic minds have led to major breakthroughs in the IT industry. Keeping all these developments in mind and the generation's needs, we came out with an idea for a Machine-Learning based project, Student Enrolment Prediction. As the name suggests, this app helps higher institutions/universities to know the academic status of their organization.**

Student Enrolment Prediction lets the organizations know the probability of a student dropping out, enrolling, or graduating from their institution and consequently helps them take necessary steps in order to improve their academic structure by making amendments to their educational curriculum.

Keywords—tech, altruistic, Enrolment, geeks, Machine-Learning, curriculum, academic.

I. Introduction

Student Enrolment Predictor is an online web application, designed mainly for higher educational institutions/universities. Through the use of this app, universities or higher institutions can get to know about the dropout or enrolment rates in their institution and take necessary steps to eradicate the rates. This app takes into account different factors concerning the student whose prediction is to be made, like 10th Percentage, 12th Percentage, College CGPA, etc. to make a prediction about the student whether he/she will drop out of college or not.

II. Objective

The main objective of this app is to discover patterns in data to achieve the desired result. Preprocess and analyze the data and make predictions for the data available. Devise a model which would help improve the present as well as the future education system.

III. Literature Survey

Previous research has established various definitions of student dropout. The most common definition focuses on whether students will continue to be active until the end of the week or if the current week is the last week in which students are active.

Early identification of students at risk of dropping out is critical to reducing the problem and allowing for the necessary conditions to be targeted. As a result, timing considerations are important for the dropout problem. Some studies have found that 75% of dropouts occur in the first few weeks. Dropout prediction is frequently regarded as a time series prediction problem or a sequence labeling problem. These can correspond to students' final status. On the other hand, the time dimension can be indirectly included in the prediction of dropout by using the input features available in a specific time window, which allows for the selection of a suitable form of intervention.

Until today, there has been no concrete implementation of Student Enrolment Predictor apps. Universities have relied on their previous records to make amendments to their curriculum. The history of such apps can be difficult to trace, as these are inherently ephemeral in nature. We create and analyze the records using them. There are few records of such apps being used in ancient history since the documentation of education techniques was not as widely covered as they are today.

A. Time before the advancements

In the last decades, artificial intelligence (AI) has shown the ability to change many aspects of our society and our lives because it offers the technological basis for new services and tools that help decision-making in daily life. Education is not immune to this revolution, indeed, AI and ML algorithms can play a significant role in improving several aspects of the learning process. The main reason for emphasizing these technologies is the possibility of building new predictive systems which can be utilized to help students to plan for their future and improve their academic careers.

One of the most frequently researched topics in educational data mining (EDM) and learning analytics (LA) disciplines is predicting a student's learning success or failure. EDM is concerned with the analysis of study-related data to comprehend student behavior. These techniques are typically used to provide more effective learning environments by revealing useful information for modifying course structure or to aid in the prediction of student performance and behavior.

scholars began to realize the importance of learning individual facts and concepts that formed larger concepts as well. They realize that knowing parts helps to understand everything (after all, it is very difficult to understand physics without memorizing formulas and understanding how they are used), a skill that is greatly aided by flashcards.

B. Concept Generation

Concept generation is a technical description of a product's form and working mechanisms. It is a critical stage in product design, which is important because it provides insight that transforms the customer's idea of a product into an approximate description of a real product's mechanisms.

The various steps involved in this process are

● Preparation: This stage is one of the most critical steps in concept generation. It includes identification of the customers and their needs, reviewing the product, and documenting it.

● Development: This stage involves the generation of concepts, exploring existing concepts, optimizing them, and bringing out brainstorming ideas to execute the results.

● Realization: After the preparation and development of a product, it is necessary to review it to filter out the important features and implementations carried out in the process. This step involves reviewing the ideas and the solutions and ranking them based on their cost, efficiency, and complexity.

● Conclusion: Following all the steps under concept generation, we are finally ready with the product and it is ready to be served to the end-users.

C. Thunderstorms and Modern Making of the App

The project required a lot of thinking on how and what features should be implemented. Keeping all the basic necessary requirements a project should have as well as bringing out some less executed concepts, we have summarized some features the app contains as follows:

● Feature 1: An hyperparameterized and optimized machine learning algorithm to provide results with great accuracy.

● Feature 2: A simple and interactive interface for the users to enter the required details and know the probability of an individual dropping out or enrolling in an institution.

● Feature 3: Providing steps to be taken to improve the academic curriculum in case the dropout rate is too high.

countries are encouraged to create their own learning aids.

During the Cold War, flashcards grew in popularity as their use was promoted as a way to ensure that U.S. students. During this time, game companies such as Milton Bradley, which previously produced large numbers of cards, were replaced by card-only and prep test companies.

The level of flashcards produced in bulk has been increased based on card-based studies as the industry becomes more competitive. Even student-generated flashcards become more complex as teachers begin to give tips on their creativity. Flashcards start to add more context to the concepts and are more integrated with the classes.

D. Apps Today

To date, there has never been a tangible implementation of such applications. Paper flashcards have been used since ancient times and their use was minimal. The history of flashcards can be difficult to follow, as natural flashcards are naturally emerald. We create them. We read them. Then we throw them in the recycling bin. There are few records of flashcards used in ancient history as the writing of educational strategies was not as widely covered as it is today.

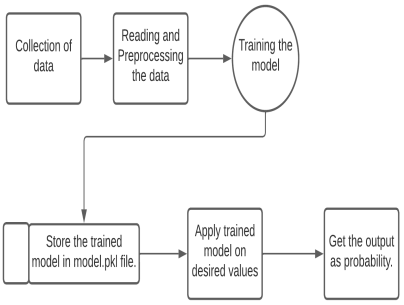

Fig. 1. Schema Design

IV. Proposed Work

A. Ideal Situation

Ideally, the Student Enrolment Predictor app would be able to help the institutions/universities to get a detailed analysis of the dropout rate of their organization.

B. Reality

Currently, the use of such apps has been very limited because of its less popularity and limited reach to people. Until now, universities have relied on n past data to make changes in their curriculum as transforming to such a complex model has been very overwhelming to the users. Identifying this problem, we came up with an idea to help users transform from this orthodox method to a whole new web experience.

C. Consequences

Our team aimed to build an app that could increase user engagement and thereby lead to a better educational system. We spend about four hours daily finding new and unique solutions to the problems that the users may face. Keeping all these things in mind, creating a user-friendly interface that provides a seamless experience is our first and foremost priority.

D. Proposal

Our team seeks to resolve this issue by creating an environment where the universities can increase their productivity by engaging themselves in the usage of this app, which provides them with a fully new experience as compared to ancient practices.

V. Block Diagram

The project required a lot of thinking on how and what features should be implemented. Keeping all the basic necessary requirements a project should have as well as bringing out some less executed concepts, we have summarized some features the app contains as follows:

A. Data Collection

This application has been a success mainly due to the very first step that was being implemented, i.e, data collection. We collected around 12000 unique records and trained our models based on that data to arrive at accurate results.

B. Data Preprocessing

After data collection, the next step was to preprocess and clean the data so as to derive meaningful conclusions from it. Various techniques like EDA, scaling, normalizing, and filling missing values have been implemented as major features of the application.

C. Optimization

An hyperparameterized and optimized machine learning algorithm to provide results with great accuracy.

D. Interface Design

A simple and interactive interface for the users to enter the required details and know the probability of an individual dropping out or enrolling in an institution.

E. Some extra miles

Provide steps to be taken to improve the academic curriculum in case the dropout rate is too high.

VI. Design Selection/Interpretation

A. DFD Diagram: The project design flow and plan can be best described by the Data Flow Diagram, it presents all the features and the flow that follows while the project is in a running state. From fetching data from the backend to the presentation of data to the user, all steps can be easily summarized using a Data Flow Diagram.

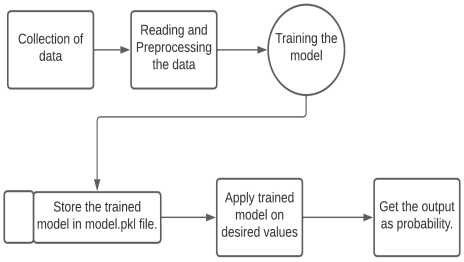

Fig. 2: DFD

VII. Conclusion

A. Achievements

The app aims at achieving sustainable development goals. While the app itself has a low environmental impact, the infrastructure required to run the software could have a drastic negative impact. Running the servers and the app requires cloud platforms to be hosted and azure services for continuous improvements and storage. Azure Fabric is the operating system of the cloud. It manages physical resources such as computers, storage, and networks, and is responsible for 'always-on availability', self-healing, optimization of available resources, and scale. While invisible to the end customers and developers, the Azure team continuously works on optimizing the efficiency of the physical infrastructure while delivering on the promise of being the best platform to develop cloud applications and services.

Building applications that can, directly and indirectly, help the world achieve the UN Sustainable Development Goals is how I choose to think about achieving sustainability. Microsoft will continue to invest its resources to further optimize its cloud infrastructure, power consumption, server, and network efficiency as well as build smart and efficient developer tools and services. As the developer community, we can use these tools and infrastructure to build tools and applications that serve longer-term objectives such as improving biodiversity, reducing carbon, promoting equality, and access to education, health, and freshwater. The Student Enrolment Predictor App promises to follow the same guidelines with similar goals of sustainability.

B. Results

Keeping in mind the past developments revolving around this app, the newer version has been designed to attain all the shortcomings of the existing systems. This app aims at developing a highly efficient and scalable application that would cater to the needs of higher institutions that want to keep track of their dropout rates. It is very easy to use and available as a web app. The idea has been successfully tested and a model has been produced using modern tools and technologies.

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