Evaluation and Optimization of students Data with Data analyzation

Kunal Chopkar B.Tech Internet of Things
Thakur college of Engineering &Technology,
Mumbai, India

Rajveer Baheti B.Tech Internet of Things
Thakur college of Engineering &Technology,
Mumbai, India

Harshil Choudhary B.Tech Internet of Things
Thakur college of Engineering &Technology,
Mumbai, India

Ms. Pratibha SajwanInternet of Things
Thakur college of Engineering &Technology,
Mumbai, India

Abstract: The student tracking system is a web-based application. Currently in schools and college teachers track the student's learning based on the report cards which is very common procedure to know about students' academic. And also, it is impossible for teachers to know about every student and find out the best in child. Students thar are not good at academics can be good in co-curricular activities and being good in academics is not the only way ahead. Hence there is a need for a solution to track all activities of a student including the academic and extra activities to keep track on student overall progress. Based in students' data, it become easy to guide the student to reach the goal and providing the feedback that can enhances his/ her skills. The aim of the project is to make a web-application to solve the issues faced by the students, parents and teachers by providing better recommendation to student and helping teacher and parent to know about the child's progress.

Key Words: Web-app, objectives, growth tracking, student data, Analyzation.

I. INTRODUCTION

With an advance of the technology, student progress tracking has emerged as a useful tool for parent, students and teachers. These systems provide real time performance of student allowing for timely intervention and support. This system is a digital platform that collect, stores and present information about student academic progress. The system allows user to tracks his progress over time, identify area of strengths and weakness, available activities conducted by institute, remaining task and deadlines and make informed decision about student education. Web-based student progress tracking system provide numerous advantages over paper-based system. They allow real time update and easy accessibility anywhere anytime. These systems generate automated reports and identify area where support may be needed. By using this Student tracking Performance, it will eliminate parents and teachers time and distance constraint of monitoring their children *Abstract* progress and help student to evaluate their actions making necessary improvement.

II. LITERATURE REVIEW

Literature review of student tracking systems using web-based technology can provide insights into the effectiveness and challenges of using technology to track student progress. Studies have shown that web-based student tracking systems have the potential to improve educational outcomes by enabling teachers to regularly monitor student performance and provide timely feedback. These systems can also support data-driven decision making by providing insights into areas where students are struggling and where additional support

may be needed. There have also been concerns about the accuracy and reliability of student data in web-based systems, as well as the security and privacy of student data. [1]

Overall, the literature suggests that while web-based student tracking systems have the potential to support student learning, they should be used with caution and in conjunction with other educational approaches that promote student- centered, collaborative, and creative learning. It is important to make sure that our systems are developed to meet the requirements of the wide ranging or varied students, respect student privacy, and support high- quality education. Using a mobile application has several benefits that we may benefit from. Regarding my project, which is focused on education, there are a number of advantages to such domains, including the fact that children may learn without restrictions. The mobile application makes it simple for students to get information on many courses whenever and wherever they are[8]. Additionally, they have access to their test schedule and results, and they maintain contact with their professors to address any issues they may be having with their study. Using this mobile application, parents can also monitor their child's performance. Parents and instructors can monitor their children's and pupils' progress indirectly. Additionally, this system application might motivate kids to learn and study. According to the study, utilizing mobile and web applications helps students learn more effectively and perform better in class. These applications are more engaging and serve to excite students' minds than using textbooks and a whiteboard for instruction. We utilize the internet a lot these days in ourdaily lives. The majority of individuals had a device that they used to communicate with one another, learn the latest information about their surroundings, and interact with other people. This device also gives teachers a simple approach to support and motivate their students' learning. This application is being made keeping the student consent in mind. Many times, student prefer external coursesthat cost them money. With the help of this system teacher can give students the respective and necessary courses that astudent shall do to complete its certification and to meet institute demand as well. This will help the student to make the certifications and strong skill building in their core knowledge field which further helps to build a good resume.[3]

III. METHODOLOGY

Although we can use a lot of models for demonstrating the flow of our project, we have particularly used waterfall model for our student development life cycle project. For our waterfall model, it comprises of 5 stages in with respect to our project which Requirement, Design, Development, Testing, Deployment and finally Maintenance. The possible needs of the application are examined .This phase involves understanding the needs and goal and identifying the functional and nonfunctional requirement of system. The design phase, which consists of the interfaces, is the second.. In this phase, the architecture and design of system is determined, including the system component, datastructure, user interface and navigation. The following phase is the one wherein we lay the groundwork or we can say that we start the development of the project. The actual software development takes place, including

coding, testing, debugging, and fixing any issues. The fourthphase is testing to ensure that the system meet requirement and work an expected [7] The final phase of the Waterfall model is maintenance, which involves fixing any issues that arose during testing and updating the software. All the stages in model should be finished before the following one is carried out, including functional testing and security testing. Once the system is tested and verified to be working, it is deployed to production, making it accessible to the user [9]
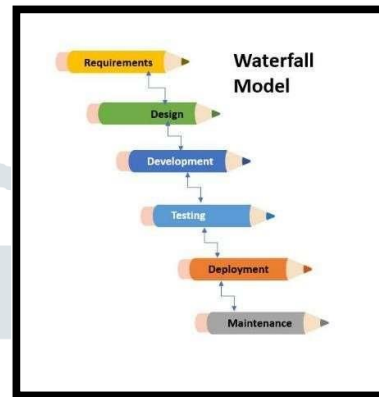
1. Waterfall Model

This phase is the initial phase for finishing the programt.Here in we start the work on our topic. Here the requirements are the following, Hardware requirements for this project are personal system. Software requirements for this project are python, HTML, CSS, EXPRESS, REACT, NODE JS and

PHP for the database. This helps in data collection and later the data is used for analysis purpose to create the outcome. In Design we are As it helps to determine the overall system architecture, this step is essential in the process of defining project requirements and hardware. The project development team may successfully execute the system by utilizing the data acquired during this phase to get important insights into the hardware requirements and project specifications. The project is furthermore constructed on a particular design that was developed and improved throughout the earlier phase, ensuring a strong basis for the development process.. Testing is done in small portions where each part is tested to measure the performance of the building web application. After testing each part individually, all of them are then combined and integrated in a single system.

[10] The final project should be tested and debugged at every instance to detect any error or faults in the program if present at all. After testing, we install the project on cloud.

The project goes through a process of modification and adaptation throughout this phase with the goal of improving performance. At the client's request, maintenance can be done.

IV. PROTOTYPE DESIGN

Evaluation and Optimization of students Data with Data Analyzation will have a model that take the student data and based on the all the important features will generate an output. This will act as monitoring tools for student and parents to identify their overall performance. Below is the flowchart of how student will take advantage of the model.
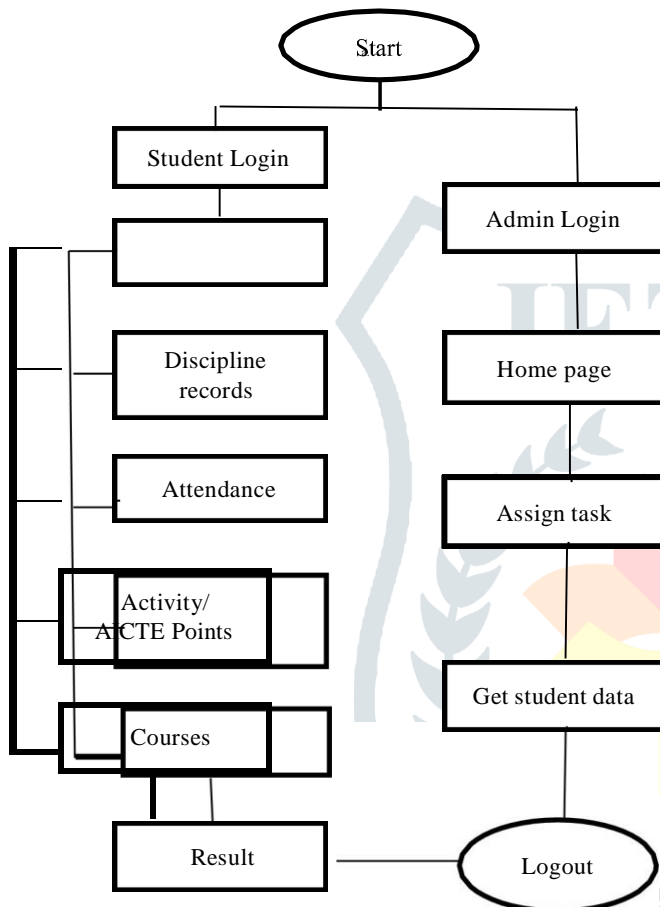

Figure 1

FLOWCHART STUDENT TRACKING SYSTEM

[2,4,5,6] The figure above shows the flow of our project application from the start that is user can log into the end stage which is user logout. The Login page will always be the first screen to see whenever a user launches the program. A valid username and password must be entered by the user in order to use the application's functionalities. In relation to the student page, the user will be given a number of alternatives to pick from when they go to the Main menu page, including Examination Result, Attendance Record, and Discipline Record. These choices provide a way to access particular capabilities and details about data pertaining to students, Activity Hours, AICTE points.

When clicked on Exam outcome it will redirect us to the report pertaining to exams which will then be further divided and segregated according to the topics or exams. the end user can then choose between them to see their child's results.

On the homepage, there are student attendance, discipline records, marks and the course taken by them. By taking these features as the input, the student overall ranking will be decided by the model which help them to classify their position in the institute. It will also allow them to choose the correct area where they need to focus. The weak and strong points of student will be displayed Course is place that will address the student with multiple workshop and certification courses that can help student to build strong resume. AICTE points and activity hour section will consist of the event conducted by the college and student has to make sure to acknowledge the events attended by them in order know the amount of time they need to spend in completing hours. Student can track their activity regularly and even teachers and parent can track student activity Parallel to this, teachers may use the system to look into the numerous variables that affect how students behave. The examination of these variables results in the establishment of a number of study areas in the field of big data in education. Examining the possible link between family finances and academic success among students is one area of focus. Does a student's financial situation, for instance, have any impact on their capacity to achieve academic success? Researchers may also look for a relationship between a student's past work history and their chances of landing a job following graduation. Investigating the link between students' certificates and future job advancement is another fascinating subject. Researchers may also look into whether particular programs have been most effective in promoting students looking for employment. The possibility of a connection between a student's GPA and their employability is a last topic that warrants research. The vast array of study subjects that may be investigated utilizing educational big data is illustrated by just a few of these examples.

The built model accuracy can be tested using: [8]

$$Accuracy = \frac{Number\ of\ correct\ predictions}{Total\ number\ of\ predictions}$$

$$OR$$

$$Accuracy = \frac{TP + TN}{TP + TN + FP + FN}$$

$$Where:$$

$$TP = True\ Positive, TN = True\ Negative,$$

$$FP = False\ Positive, FN = False\ Negative$$

$$Precision = \frac{TP}{TP + FP}, \qquad Recall = \frac{TP}{TP + FN}$$

$$F1\ Score = \frac{(2*Precision*Recall)}{(Precision + Recall)}$$

V. Conclusion

By leveraging data visualization approaches, this solution solves the issues with student performance that both students and instructors are faced with. It not only visually displays all the pertinent student data, but also forecasts the student's strengths, weaknesses, and general development based on a wide range of factors. This methodology can help teachers learn more about their students' skills while also saving time. Teachers may concentrate on specific students and provide tailored career counseling by taking each student's academic performance into account and critically examining the model's results. This solution goes above and beyond by including a prediction model that helps students to discover their weak areas and focus on improving them, unlike typical programs that only view current data.

In conclusion, incorporating big data innovations offers considerable benefits in performing in-depth studies to understand more about student behavior, eventually improving the overall efficiency of the educating and gaining knowledge.

VI. Referrences

[1] A. Viste, D. A. Holm, P. L. Wang, and G. D. Veith, "Kinetics and Mechanism of the Silver(II)-Phosphorous Acid Reaction," Inorg. Chem., vol. 10, no. 3, pp. 631–633, 2020.

[2] M. L. Cheok, S. L. Wong, A. F. Ayub, and R. Mahmud, "Teachers' Perceptions of E-Learning in Malaysian Secondary Schools- Frog VLE," Malaysian Online J. Educ. Technol., vol. 5, no. 2, pp. 20–33, 201.

[3]. Nie M, Yang L, Sun J, et al Advanced forecasting of career choices for choices for college students based on campus big data[J]. Frontiers of Computer Science, 2017(7):1-10.

[4]M. M. Elsobeihi and S. S. Abu Naser, "Effects of mobile technology on human relationships," Int. J. Eng. Inf. Syst., vol. 1, no. 5, pp. 110–125, 2017.

[5] K. Diliberto-macaluso and A. Hughes, "The Use of Mobile Apps to Enhance Student Learning in Introduction to The Use of Mobile Apps to Enhance Student Learning in Introduction to Psychology," no. June, pp. 1–6, 2018.

[6] Zhibing Liu, Huixia Wang,Hui Zan "Design and implementation of student information management system." 2010 International symposium on intelligence information processing and trusted computing. 978-0-7695- 4196-9/10 IEEE.

[7] Zhi-gang YUE, You-wei JIN, "The development and design of the student management system based on the network environment",2010 International Conference on Multimedia Communications, 978-0-7695- 4136-5/10 2010 IEEE.

[8] TANG Yu-fang,ZHANG Yong-sheng, ,"Design and implementation of college student information management system based on the web services". Natural Science Foundation of Shandong Province(Y2008G22), 978-1-4244-3930-0/09 2009 IEEE.

[9] M.A. Norasiah and A. Norhayati. "Intelligent student information system". 4th International conference on telecommunication technology proceedings, Shah Alam, Malaysia, 0-7803-7773-7/03 2003 IEEE.

[10] Jin Mei-shan1 Qiu Chang-li 2 Li Jing 3. "The Designment of student information management system based on B/S architecture". 978-1- 4577-1415-3/12 2012 IEEE.