

University Eligibility Predictor

Abstract –University Admission Predictor System is a web based application system in which students can register their marks along with their personal information. This helps to predict their admissions in colleges. Administrator can add the college details and the batch details. Using this Application, the entrance seat allotment becomes easier and efficient. The main advantage of the project is the computerization of the entrance seat allotment process. Administrator has the power for the allotment. Admin can add the allotted seats into a file and the details are saved into the system. The total time for the entrance allotment becomes lower and the allotment process becomes faster. It helps students to make right decisions for choosing their college. In which students can register with their personal as well as marks details to prediction the admission in colleges and the administrator can allot the seats for the students. Administrator can add the college details and the batch details. Using this Application, the entrance seat allotment became easier and can be implemented using system. The main advantage of the project is the computerization of the entrance seat allotment process. Administrator has the power for the allotment. Admin can add the allotted seats into a file and the details are saved into the system. The total time for the entrance allotment became lesser and the allotment process became faster. It helps student for making decision for choosing a right college.

Index Terms –University, Admission, Seats, Admin, Feedback, Admission Application.

1. INTRODUCTION

Today all the work at the time of admission of the students is done manually by ink and paper, which is very slow and consuming much efforts and time. In the modern world of technology, computer are affecting our lives in more ways than we probably are aware of computerized management maintaining information of an educational institute, colleges, other the list is endless. The main principle behind the need of college admission system is easy supervision of institutes. It can handle the details of students such as fee details or marks details. This Student Database has been designed taking into account the practical needs to manage a Students data. Moreover, it provides security at product level as well as user level. Its design concentrates on 3 types of users:

1. Admin
2. Students
3. Account

4. Student section.

This Database follows a typical event flow seen in such a system. The design and implementation of a comprehensive student information system and user interface is to replace the current paper records. This system is intended for communication purpose between users of academic institutions. This system helps the administrator to easy access the information of students. This system is also helpful for the administrator because he/she can easily bring changes to the records of the students. The mobile application would require connecting to the database on a remote server using Wi-Fi technology. Our system primarily focuses on building an efficient and user friendly Android mobile application for a Cloud based Intra-College Communication Information System using Mobile Clients. The application will be installed on the users (student/teachers) Smartphone. Here the concept of unique ID is also included using which the each student gets one unique identification number by email. This id will help to access his info or find him from multiple students..After XII, students desiring to take admissions in professional colleges like engineering face lots of problems. Admissions in engineering colleges in the state of Maharashtra or any state is based upon common entrance test (CET) and since more than 1.5lakh seats are to be allotted in more than 200 engineering colleges and over 35 different branches of engineering , for students belonging to many categories like open, home university, outside home university, reserved category(SC,ST, OBC etc) the problem becomes more serious and students struggle to understand which colleges they are likely to get admitted in, even after going through cut-off data of previous years. Many students fill wrong Options and fail to get admission. To minimize the stress of students we came up with the idea of a computer aided method which will help the students get the list of all colleges in which they could get the admission at the click of a button, making the admission process fast and easy.

OBJECTIVE

University/College admission predictor is a boon to many students. This helps the student not only to help in filling out the application forms but also give the students an idea about their future college by calculating their cut off.

- When students come from rural places , they find it hard to go along with the formal procedures. So, this application helps them a lot and eases out their fear.
- Whatever may be their scores , this application helps to find the best colleges . Hence, our proposed computer aided system will help the students to get the list of all colleges in which they could get the admission at the click of a button.
- The students only have to enter their marks of XII, AIEEE etc. With this application, the students can very easily obtain the list of colleges even branch wise and course wise. This will not only make the admission process easy but also minimizes stress for students . The main objective of our system is to make the right choice of colleges.

2. EXISTING SYSTEM

Today in college's student details are entered manually .The student details in separate records are tedious task .Referring to all these records updating is needed .There is a chance for more manual errors.

1. When the student comes in college.
2. First of all, he/she takes admission form from reception.
3. Fills it and submits it into office.
4. Filled form is first checked with documents like merit list and details came from university and verified by an official person ,if there is any mistake then it is corrected.
5. At the time of submission of it the fees is deposited by the candidate.
6. At the time of submission of admission form admission number is assigned to the candidate by the institute.
7. Candidate gets the receipt of fees deposition.

DISADVANTAGES OF EXISTING SYSTEM

1. Require much manpower i.e. much efforts, much cost and hard to operate and maintain.
2. Since, all the work is done in papers so it is very hard to locate a particular student record when it is required.

3. PROPOSED SYSTEM

The main goal of the system is to automate the process carried out in the organization with improved performance and realize the vision of paperless admission. Some of the goals of the system are listed below:

- Manage large number of student details.
- Manage all details of student who registered for the course

- Create student accounts and maintain the data is effectively.
- View all the details of the students.
- Reduce the workload in interviewing the students for selection
- Activities like updating, modification, deletion of records should be easier.

ADVANTAGES OF PROPOSED SYSTEM

The aim of the proposed system is to address the limitations of the current system. The requirements for the system have been gathered from the defects recorded in the past and also based on the feedback from users of previous metrics tools. Following are the objectives of the proposed system:

- Reach to geographically scattered student.: One of the important objectives of the admission system is communicate with all the students scattered geographically.
- Reducing time in activities: Reduce the time taken process the applications of students ,admitting a student, conducting the online examination, verify student marks, and send call letters to selected students.
- Centralized data handling: Transfer the data smoothly to all the departments involved and handle the data centralized way.
- Paperless admission with reduced man power : Reduce the manpower needed to perform all the admission and administration task by reducing the paper works needed. □ Cost cutting. Reduce the cost involved in the admission process.
- Operational efficiency: Improve the operational efficiency by improving the quality of the process.



Fig:1 Dataflow Diagram

4. SYSTEM DESIGN

The system comprises of 2 major modules with their sub-modules as follows:

- Admin:
 - ✓ Add College: Provide details for college like name, address, streams provided etc.

- ✓ Add Cut Off: Select College from database and provide cut off for previous years.
- ✓ Manage / View Colleges: Update details for college and delete them if require.
- ✓ View Students: View list of students registered into the system.
- ✓ View Feedback: View feedback sent by user (student).

• Student:

- ✓ Register: Student will register themselves to the system by providing name, email ID, marks etc.
- ✓ View College: Student will be provided an option to show colleges near him and will show all the colleges based on his score.
- ✓ View Profile: Can view their own profile details.
- ✓ Feedback: Student can send the feedback to notify the admin about the system.

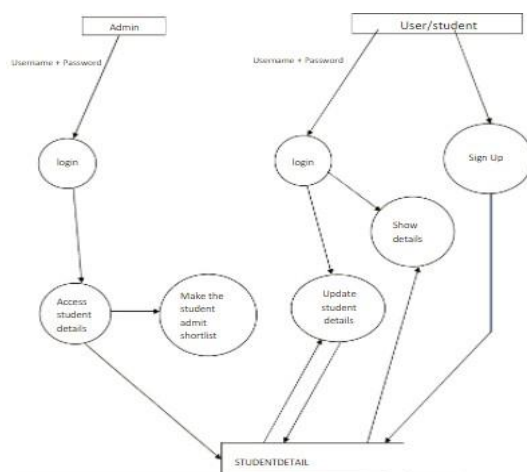


Fig-2: System Architecture

The system design develops the architectural detail required to build a system. As in the case of any systematic approach, this software has undergone the best possible design phase fine tuning all efficiency, performance and accuracy levels.

DESIGN METHODOLOGY

System design focuses on the detailed implementation of the feasible system .It emphasis on translating design specifications to performance specification. System design has two phases of development logical and physical design. During logical design phase the analyst describes inputs (sources), out puts(destinations), databases (data sores) and procedures (data flows) all in a format that meets the uses requirements. The

analyst also specifies the user needs and at a level that virtually determines the information flow into and out of the system and the data resources. Here the logical design is done through data flow diagrams and database design.

The physical design is followed by physical design or coding. Physical design produces the working system by defining the design specifications, which tell the programmers exactly what the candidate system must do. The programmers write the necessary programs that accept input from the user, perform necessary processing on accepted data through call and produce the required report on a hard copy or display it on the screen.

MODULAR DESIGN

A software system is always divided into several sub systems that makes it easier for the development. A software system that is structured into several subsystems makes it easy for the developmentandtesting.The different subsystems are known as the modules and the process of dividing an entire system into subsystems is known as modularization or decomposition .A system cannot be decomposed into several subsystems in any way. There must be some logical barrier, which facilitates the separation of each module. The separation must be simple but yet must be effective so that the development is not affected. The system under consideration has been divided into several modules taking inconsideration the above-mentioned criteria. The different modules are 1.user module 2.Administrator module

INPUT DESIGN

The system needs the data regarding the asset items, depreciation rates, asset transfer, physical verification for various validation, checking, calculation and report generation.. The error raising method is also included in the software, which helps to raise error message while wrong entry of input is done. So in input design the following things are considered.

- What data should be given as input?
- How the data should be arranged or coded?
- Methods for preparing input validations and steps to follow when error occur.
- The samples of screen layout are given in the appendix.

4.3 OUTPUT DESIGN

Output design is a process that involves designing necessary outputs in the form of reports that should be given to the users according to the requirements. Efficient, intelligible output design should improve the system's relationship with the user and help in decision making .Since the reports are directly referred by the management for taking decisions and to draw conclusions they must be designed with almost care and the details in the

reports must be simple, descriptive and clear to the user. So while designing output the following things are to be considered.

- Determine what information to present.
- Arrange the presentation of information in an acceptable format.

DATABASE DESIGN

The overall objective in the development of database technology has been to treat data as an organizational resource and as an integrated whole. DBMS allow data to be protected and organized separately from other resources. Database is an integrated collection of data. The most significant form of data as seen by the programmers is data as stored on the direct access storage devices. This is the difference between logical and physical data. Database files are the key source of information into the system. It is the process of designing database files, which are the key source of information to the system. The files should be properly designed and planned for collection, accumulation, editing and retrieving the required information. The organization of data in database aims to achieve three major objectives: -

- Data integration.
- Data integrity.
- Data independence.

FIELDNAME	DATATYPE
regid	Varchar()
name	Varchar()
father	Varchar()
age	Integer
gender	Varchar()
religion	Varchar()
caste	Varchar()
day	Integer
Month	Integer
year	Integer

FIELDNAME	DATATYPE
Regid	Varchar()
Password	Varchar()
Type	Varchar()
Flag	Integer

5. IMPLEMENTATION AND MAINTENANCE

Implementation is an activity that is contained throughout the development phase. It is a process of bringing a developed system into operational use and turning it over to the user. The new system and its components are to be tested in a structured and planned manner. A successful system should be delivered and users should have confidence that the system would work efficiently and effectively. The more complex the system being implemented the more involved will be the system analysis and design effort required for implementation.

IMPLEMENTATION PLANS

The major activities in implementation plan are cost estimation, schedule and milestone determination, project staffing, quality control plans, and controlling and monitoring plans. The implementation plan involves the following:

Testing to confirm effectiveness.

- Detection and correction of errors.

The system has two modules. They are

1. User Administrator Students logging in to apply for the course by filling an application form provided by online.
2. College principal/administrator logging in may also access/search information put up by the students.

CHANGE OVER METHOD

If the implementation is changed from one data structure to another, the internals of the object need to be changed, that is the data definitions and the implementation of the operations. From the outside, the directory object can continue to be used in the same manner as before, because its interface is not changed which one detects the defects in the software. Testing is a set of activities that work towards the integration of entire computer based system. A good test case is one that has a high probability of finding an as-yet undiscovered error. A successful test is one such uncovers or finds such errors. If testing is conducted successfully, it will uncover errors in the software. It also demonstrates that software functions are being performed according to specifications and also behavioral and performance requirements are satisfied. For this, test plans have to be prepared. The implementation of a computer system requires that test data has to be prepared and that all the elements in the system are tested in a planned and efficient manner. Nothing is complete without testing, as it is vital success of the system.

TESTING OBJECTIVES

There are several rules that can serve as testing objectives. They are:

- Testing is process of executing a program and finding a bug. A good test case is one that has a high probability of finding an undiscovered.

- A successful test is one that uncovers an undiscovered error. If testing is conducted successfully according to the objectives as stated above, it would uncover errors in the software. Also testing demonstrates that software functions appear to be working according to the specification, that performance requirements appear to have been met.

5.3.1. UNIT TESTING

Unit testing is carried out screen-wise, each screen being identified as an object. Attention is diverted to individual modules, independently to one another to locate errors. This has enabled the detection of errors in coding and logic. This is the first level of testing. In this, codes are written such that from one module, we can move on to the next module according to the choice we enter.

SYSTEM TESTING

In this, the entire system was tested as a whole with all forms, code, modules and class modules. System testing is the stage of implementation, which is aimed at ensuring that the system works accurately and efficiently before live operation commences. It is a series of different tests that verifies that all system elements have been properly integrated and perform allocated functions. System testing makes logical assumptions that if all parts of the system are correct, the goal will be successfully achieved. Testing is the process of executing the program with the intent of finding errors. Testing cannot show the absence of defects, it can only show that software errors are present.

INTEGRATION TESTING

This testing strategy combines all the modules involved in the system. After the independent modules are tested, dependent modules that use the independent modules are tested. This sequence of testing layers of dependent modules continues until the entire system is constructed. Though each module individually, they should work after linking them together. Data may be lost across interface and one module can have adverse effect on another. Subroutines, after linking, may not do the desired function expected by the main routine. Integration testing is a systematic technique for constructing program structure while at the same time, conducting test to uncover errors associated with the interface. In the testing the programs are constructed and tested in the small segments.

WHITE BOX TESTING

White-box testing is concerned with testing the implementation of the program. The intent of this testing is not to exercise all the different input or output conditions but to exercise the different programming structures and data structures used in the program. White box testing is also called structural testing. To test the structure of a program, structural testing aims to achieve test cases that will force the desired coverage of different structures. Various criteria have been proposed for this there are three different

approaches to structural testing: control flow-based testing, data flow-based testing, and mutation testing.

BLACK BOX TESTING

In black-box testing the structure of the program is not considered. Test cases are decided solely on the basis of the requirements or specifications of the program or module, and the internals of the module or the program are not considered for selection of test cases. In black-box testing, the tester only knows the inputs that can be given to the system and what output the system should give. This form of testing is also called functional or behavioral testing. The most obvious functional testing procedure is exhaustive testing. One criterion for generating test cases is to generate them randomly. There are no formal rules for designing test cases for functional testing. In fact, there are no precise criteria for selecting test cases.

6. FUTURE SCOPE

The future scope of this project is very broad.

Few of them are:

- This can be implemented in less time for proper admission process.
- This can be accessed anytime anywhere, since it is a web application provided only an internet connection.
- The user had not need to travel a long distance for the admission and his/her time is also saved as a result of this automated system.

7. ALGORITHMS

Multiple machine learning algorithms were used for this research, K- Nearest Neighbor and Multivariate Logistic Regression algorithms were used to predict the likelihood of the students getting admission into university based on their profile. Decision Tree algorithm was used to predict the rank of the college that would be suitable for the students based on their profile and suggest the list of universities accordingly.

K-Nearest Neighbors: It is an algorithm which is used widely for classification and regression problems. Due to its simplicity and effectiveness, it is easy to implement and understand. It is a supervised machine learning algorithm that uses available data to create the model and further that model can be applied to classify the new data. The class of new data is determined by the class of its neighbors. Distance is calculated between the unseen data sample and the all other data samples already present in the dataset. Depending on the value of K, that many nearest neighbors are selected and their class is identified. The class of neighbors which has majority is assigned to the class of the new data sample.

Generally, Euclidean distance is used to calculate the distance between the records. Multiple values of K should be tried and tested, and the value of K at which best performance is observed must be selected for the model.

Logistic Regression: Logistic regression algorithm is used to identify the probability of occurrence of an event based on single predictor variable. Multivariate Logistic regression can be used to determine the probability of the occurrence of an event based on multiple predictor variables. The class variable that has to be predicted has to be binary or dichotomous. Logistic Regression is also a supervised machine learning algorithm which used data with predetermined classes to create a model and perform predictive analysis on unseen data.

Decision Tree: It is a supervised machine learning algorithm. Due to its simple logic, effectiveness and interoperability it the most widely used classification algorithm. The model works by creating a tree-like structure by dividing the data-set into several smaller subsets based on different conditional logic. The main components of the decision tree are the decision nodes, leaf nodes and the branches. Nodes with multiple branches are the decision nodes, nodes with no branches are called the leaf nodes, and the top node is called the root node of the decision tree. The nodes are connected to each other via branches based which are different conditions. The root and decision nodes are created by computing the entropy and information gain for the data-set.

Evaluation

K-nearest neighbor and Multivariate logistic regression algorithms were used to create a model that can be used to predict the likelihood of success of a students application to the university based on his/her profile. Both algorithms were tested and their performance was evaluated based on different factors like Accuracy, Sensitivity, Specificity and Kappa value. As can be seen the figure given below model created using K-Nearest Neighbor outperformed the model created using Logistic Regression on all the performance measures. Also by looking at the variance in the values of the data KNN seemed to be the best-fit algorithm to create the Student Admission Predictor System

8. CONCLUSION

This system, being the first we have created in PHP, has proven more difficult than originally imagined. While it may sound simple to fill out a few forms and process the information, much more is involved in the selection of applicants than this. Every time progress was made and features were added, ideas for additional features or methods to improve the usability of the system

made themselves apparent. Furthermore, adding one feature meant that another required feature was now possible, and balancing completing these required features with the ideas for improvement as well as remembering everything that had to be done was a project in itself. Debugging can sometimes be a relatively straight forward process, or rather finding out what you must debug can be. Since so many parts of the admissions system are integrated into one another, if an error occurs on one page, it may be a display error, for example; it may be the information is not correctly read from the database; or even that the information is not correctly stored in the database initially, and all three must be checked on each occasion. This slows down the process and can be frustrating if the apparent cause of a problem is not obvious at first. Language used must be simple and easy to understand and compatibility is paramount. If this system were not designed as an entirely web based application, it would not have been possible to recreate its current state of portability. Overall, the system performs well

Accuracy was considered to be main metric to evaluate the performance of the models, as the data used for creating the models was balanced. Also, prediction of the true positive and true negative scenarios was equally equivalent. The KNN model performed well with an overall average accuracy of 76%. The decision tree model which was created to predict the rank of the universities suitable for the student provided the result with an accuracy of 80%.

The main objective of this research was to develop a prototype of the system that can be used by the students aspiring to pursue their education in the abroad. Multiple machine learning algorithms were developed and used for this research. KNN proved to best-fit for development of the system when compared with the Logistic regression model. The model can be used by the students for evaluating their chances of getting shortlisted in a particular university with an average accuracy of 75%. Decision Tree algorithm was used to predict the universities which were best suitable for a student based on their profile. The decision tree algorithm proved to be 80% accurate. A simple user interface was developed to make the application interactive and easy to use for the users from the non-technical background. The overall objective of the research was achieved successfully as the system allow the students to save the extra amount of time and money that they would spend on education consultants and application fees for the universities where they have fewer chances of securing admission. Also, it will help the students to make better and faster decision regarding application to the universities.

and while it does not include all of the features that may have been desired, it lives up to initial expectations. The majority of features that are included work flawlessly and the errors that do exist are minor or graphical.

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