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Academic Admission Process using Machine Learning

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Abstract

In the world of education there are students who passed out from 10th standard and want to get admission in Polytechnic college but they don't have any information about admission process and they go different places for counselling to choose the streams and get the admission in colleges and also they face a problem to select colleges at the time of filling polytechnic admission form, because they don't know how many percents chances they have to getting admission in the college as per their percentage and college cut off and if they put colleges names in the admission form which cut off is greater than the student's percentage, they don't get admission in that colleges. so basically, we create a Diploma Admission process using Machine Learning website which Name is DipEduguide, in this project we give you all information about Diploma Admission process and also create one college predictor model using Machine learning who predict the college and branches names as per student's percentage. This Machine learning model is very useful, profitable and time saving for the students, if student use this our machine learning model college predictor for their admission, then the chances to get admission in the college will increase.

Keywords: Diploma Admission Process, College Predictor model, Machine learning

1. INTRODUCTION

Best Colleges can help to improve your Skills and shine your Future. DipEduguide helps the students to find out the best colleges and also predict the colleges to increase the chances to get Admission in your Dream College as per your 10th class Percentage. you can learn about various colleges information's in our website like principal Desk and information of branches & streams and their vision & mission and their intakes, you can visit official website of provided colleges and also you can interact with college using what's app and their Email and you can also visit official website or social media pages of the colleges from our website.

DipEduguide provide information about admission process in detail including,

1. How to fill application form.
2. Final merit list date.
3. How to fill Cap round Forms.
4. Cap round 1 Form filling date.
5. Cap round 2 Form filling date.
6. Cap round 3 Form filling date.
7. Required documents.

In DipEduguide you can learn about scholarship, MAHADBT provide you a Scholarship for your study, from our website you can learn how to fill the scholarship form with their Required Documents.

2. LITERATURE SURVEY

There are many students who don't know the importance of polytechnic but those students who know the importance of polytechnic they don't know the requirements for admission in polytechnic.

The literature contains several studies about predictions of the colleges. For example, authors in [1] create an UAP a Machine learning model using K-NN algorithm for predict the university admission in abroad. The author in [2] compare the performance of postgraduate students who spend the large of amount of money and their hard work to get admission in their dream college in three model 1. Linear regression model, Decision tree model & Logistic regression model with college requirements to get the chances of admission but after that unfortunately they don't know the chances of getting admission in the college. The author in [3] is create a model using SVM (support vector machine) to suggest the engineering college for those who wish to get admission in his/her dream college but they have poor academic records in past.

3. METHODOLOGY

1. UI / UX Design:

We have created a beautiful UI / UX for students, we created this website for academic purpose that's why we given it an academic look, we use HTML, CSS & JAVA SCRIPT languages to create this beautiful & awesome website [4].

2. Responsive and user friendly:

We created this website fully responsive and user friendly which means it is easy to access and use in all devices like laptop, tablet & mobile.

3. Framework:

We use flask for backend activity, flask is a framework of python use to connect backend activity with frontend. flask plays a main role in DipEduguide to show the output of model on our webpage.

4. Data collection:

We gathered the data of cap round 3 for college cut off from DTE (Directorate of Technical Education)for our machine learning model .

5. Data preparation:

We manually extract the college cut off, college name and their branches name for algorithm to predict the college.

	ClgCutoff	CollegeName	Branches
2	80.8	People Education Society's P.E.S. Polytechnic, Nagsenvan, Aurangabad	Mechanical Engineering
3	84.4	Shri Sai Janavikas Pratishtan's Sow.Shardadevi Pandit Polytechnic instit	Computer Engineering
4	87.8	Shri Sai Institute of Technology(Polytechnic),Aurangabad	Computer Science and Engineering
5	75.6	Shri Sai Institute of Technology(Polytechnic),Aurangabad	Electrical Engineering
6	73	Shri Sai Institute of Technology(Polytechnic),Aurangabad	Electronics and Telecommunication Engineering
7	52.4	Shri Sai Institute of Technology(Polytechnic),Aurangabad	Mechanical Engineering
8	66.4	GRAMIN TECHNICAL AND MANAGEMENT CAMPUS NANDED	Civil Engineering
9	89.6	GRAMIN TECHNICAL AND MANAGEMENT CAMPUS NANDED	Computer Engineering
10	73.4	Krushnaji Purushottam Chousalkar Yogeshwari Polytechnic, Ambajogai	Automobile Engineering
11	85.2	Swami Vikekanand Institute of Polytechnic Latur	Civil Engineering
12	87.8	Swami Vikekanand Institute of Polytechnic, Latur	Electrical Engineering
13	78.6	Swami Vikekanand Institute of Polytechnic, Latur	Mechanical Engineering
14	70	Government Institute of Printing Technology, Mumbai	Printing Technology
15	79.6	Government Polytechnic, Mumbai	Civil Engineering
16	85.2	Government Polytechnic, Mumbai	Electronics Engineering

Fig -1. College Cut off csv file

There are no missing values and outliers because we prepare the data our self, so for this data there is no need to fill the missing values and deal with outliers.

6. Data Visualization:

• After preparing the data, we will be able to know what the features and labels are, so from the above data, the label we have to consider is Chance of Admission and then we have to consider the parameters that influence or play a major role in Chance of Admission

• We can get to know certain features that are more affected by the visualization (or) analysis or the use of feature importance method in decision tree

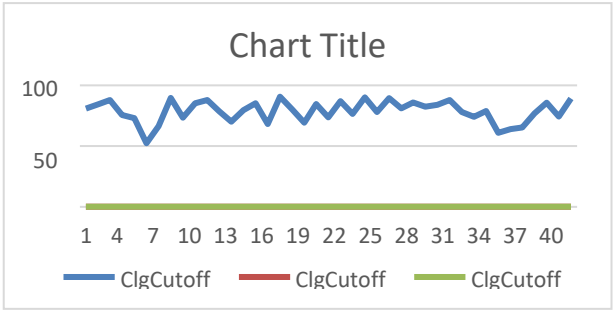


Fig -2: College Cut off chart

Once the data visualization is done, we have to do predictive modelling for this purpose first we divide the data into the train part and test part.

• we will develop model using machine learning algorithms on the train data and test model accuracy on the test data part.

• we will see which algorithms giving highest accuracy according to what parameters and take that for final consideration.

4. ALGORITHM

• A decision tree is a machine learning model that uses a tree-like graph of decisions. Decision trees are widely used algorithms in data mining and machine learning because of their simplicity and the ease of their interpretation. Decision Tree algorithms can model non-linear relationships.

• Decision tree is a non-parametric supervised learning algorithm, which is utilized for both classification and regression tasks. It has a hierarchical, tree structure, which consists of a root node, branches, internal nodes and leaf nodes.

• Decision tree learning employs a divide and conquer strategy by conducting a greedy search to identify the optimal split points within a tree. This process of splitting is then repeated in a top-down, recursive manner until all, or the majority of records have been classified under specific class labels. Whether or not all data points are classified as homogenous sets is largely dependent on the complexity of the decision tree.

• As you can see from the diagram below, a decision tree starts with a root node, which does not have any incoming branches. The outgoing branches from the root node then feed into the internal nodes, also known as decision nodes. Based on the available features, both node types conduct evaluations to form homogenous subsets, which are denoted by leaf nodes, or terminal nodes. The leaf nodes represent all the possible outcomes within the dataset[5].

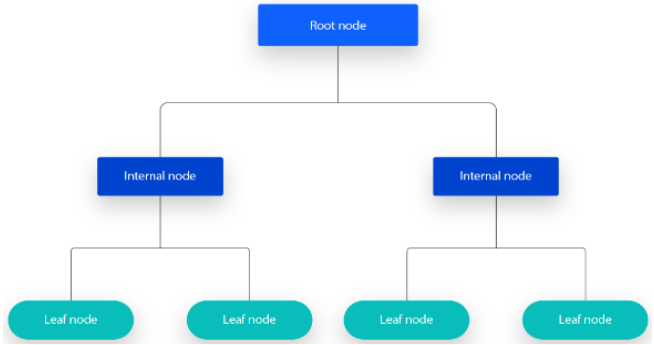
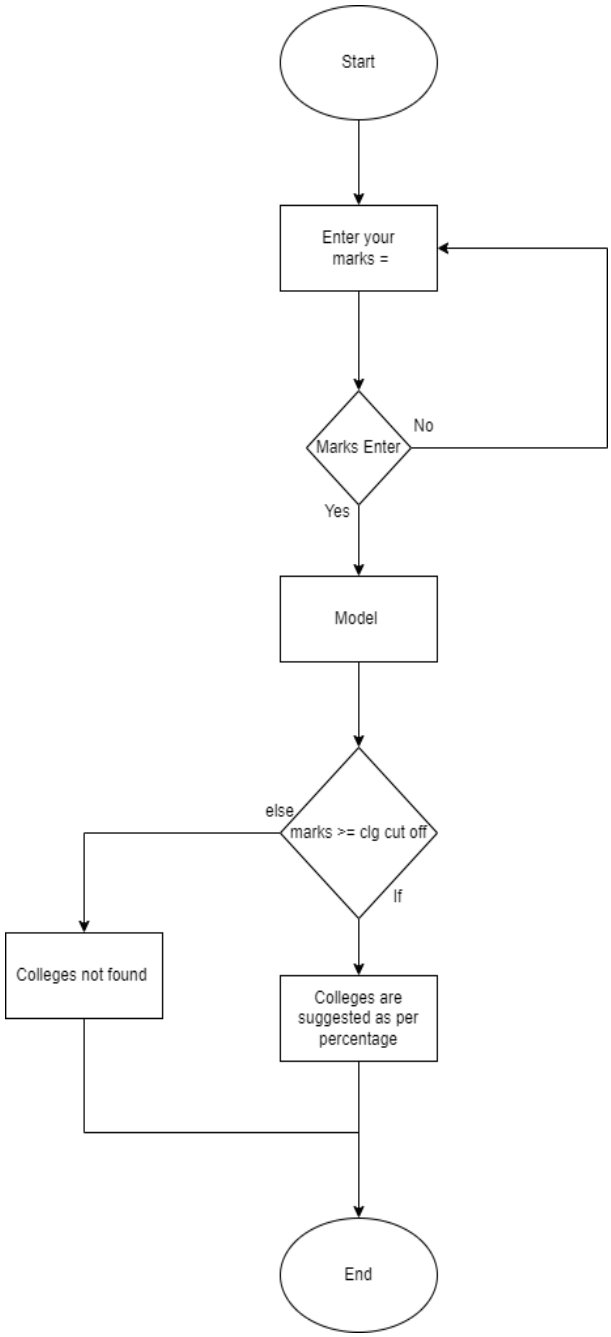


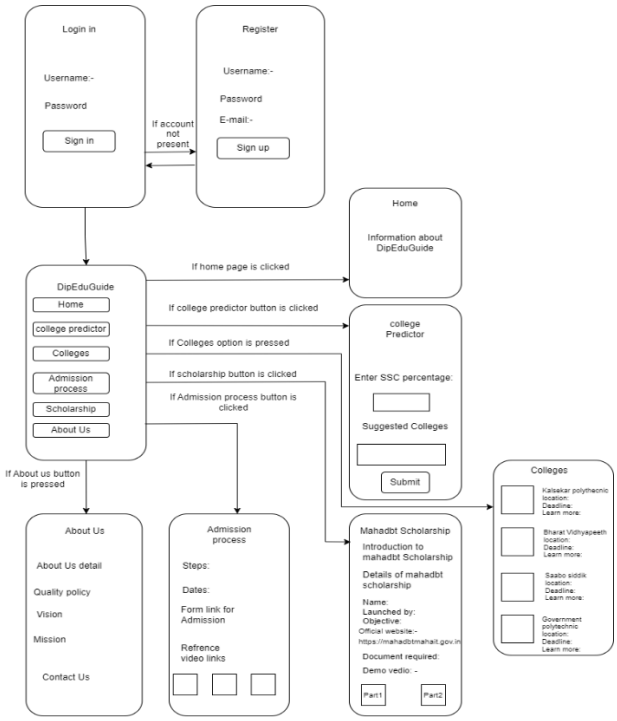
Fig -3: Root Node Chart of Decision Tree

• The implementation of the Decision Tree Classifier in the Online Admission Process System Using ML marks a substantial leap forward in revolutionising college admissions. By leveraging machine learning algorithms, this innovative approach not only predicts outcomes but also addresses inherent biases, fostering a fairer evaluation process. The Decision Tree Classifier acts as a beacon of change, analysing historical data patterns without preconceived notions, leading to a more impartial assessment of applicants. This impartiality contributes to fostering inclusivity and levelling the playing field for students, regardless of their backgrounds.

5. FLOWCHART OF MODEL



6. Website overview



7. CONCLUSIONS

In Conclusion we have created Dipeduguide using Machine learning so that students can get great help in admission and for this we have used decision tree a machine learning model so that with the help of this we can make their admission easier and help them to choosing the college at the time of form filling, this model is consume less time because from our website if student enter his/her percentage then our machine learning model suggest them the colleges name with their branches and if students choose the colleges provided by our model then the chances of getting admission in the first list is increase and they don't need to wait until last list and also we provide all the information about admission process for students.

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BIOGRAPHIES

Kirti Karande, I currently working as Assistant professor at Kalsekar Polytechnic, Panvel in artificial intelligence and Machine Learning Department.

I completed my bachelor from Mumbai University. currently pursuing my Master degree.

I have 10+ experience in teaching field in various subjects.

Currently i published international paper on the topic of "Heart Disease Prediction Using Machine learning".

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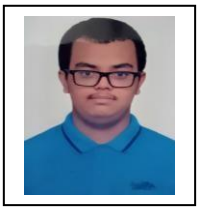

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