Creating Awareness Among Students on Online Learning Environments Through Visual Narratives

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ABSTRACT

Online learning environments are becoming very popular. Visualization is being increased which is used to present student interactions and progress with learning environments as motivations for student engagement with course content. The proposed system can help them in choosing the appropriate online course by creating awareness through visualizing. Visual narratives are being used to create awareness among the students about the online learning courses. The dataset about the online courses is obtained in form of excel sheet from Kaggle website and is then being analysed for getting the peak courses based on percentage training value using k-NN classifying algorithm. The analysed data is then converted into visual narratives using tableau and is made available as web application.

Keywords: Online Learning Environments, Visual Narratives, k-NN Classifying Algorithm

I. INTRODUCTION

The stories primarily explained using visual narratives. Photography is used to tell story and enhanced with graphics, music, and audio. Story explained visually is a visual narrative. Scholars, thinkers and educators have also started to understand the power and impact of image and visual narratives on individuals and as well as on society. Visual narratives are playing a major role in easy understanding and interpretation of any data.

MATLAB abbreviated as matrix laboratory is a numerical computing environment. This programming language was developed by Math Works. It allows manipulations of matrices, functions and data plotting, algorithm implementation, user interfaces creation. Tableau helps to see and understand the stories in the data. Tableau has a mapping functionality, and is able to plot latitude and

longitude coordinates and connect to spatial files. PHP is basically a server side scripting language.

It is used for web development and is also used for general purpose programming language. Wamp server includes SQL and PHP. SQL is a database which has high speed, while PHP is a scripting language which is used to access the data from the database.

k-NN classifying algorithm is one of the popular machine learning algorithm which is used to store all available classes and used to classify any object based on similarity measures. It is effective if the training dataset is large. It is robust to noisy training data. Online learning environments are becoming very popular and essential form of education. There are many number of forums and in each forum there are many number of courses. Students are not aware of the status of these courses. Hence awareness is created among students about the status of the courses available on the online learning environments through visual narratives.

II. PROBLEM DEFINITION

Online learning environments are evolving rapidly despite other traditional learning methods. Traditional learning methods requires many legal formalities and physical presence of the student whereas in online learning environments they have to just login and engage themselves in the course and the main advantage is that learning can be done at any time and from anywhere. The development of online learning environment is very fast. In online learning environments there are many number of courses available. Since there are many number of courses evolving every day, students are not having clear idea about choosing the appropriate course. To enable them to identify the proper course, an awareness is required. Awareness through visual narratives make them easily understandable.

III. METHODOLOGY

The dataset on courses in online learning environment is initially obtained from kaggle website. The dataset which is in the form of excel sheet consists of many attributes related to the online courses. The dataset is being pre-processed and the attributes are being filtered based on the requirements of the final web application. The processed and filtered dataset is imported to MATLAB and analysis is done. MATLAB is a numerical computing environment where implementation of algorithm and automation of any work can be done. Various formulae have been used for converting the numerical values into a particular percentage value. The k-NN algorithm is being used for classification of courses into three classes namely peak course, moderate course and peak course based on the calculated percentage value. The classification is completed and the results of the classification using MATLAB are imported to the excel sheet. The classified dataset is converted into visual narrative using Tableau software using various options and calculated field function is implemented to differentiate the ratings using different colours. Finally the web application is developed with a login page and the details about the courses are made available to the students.

IV. MODULES AND MODULAR DIAGRAM

The modules are listed below with their modular diagram followed by the detailed description,

1. Data Set Collection
2. Classification
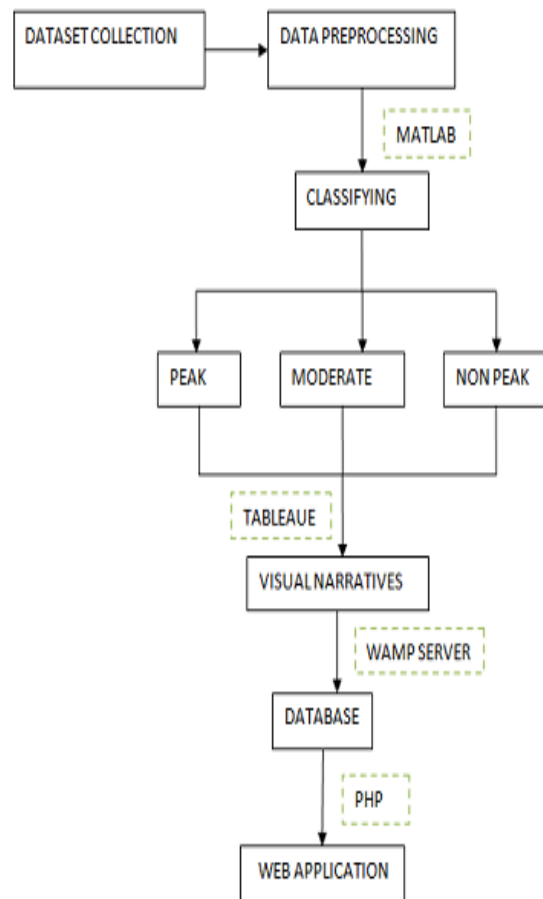3. Visualization
4. Storage and Retrieval

Figure 1

V. MODULAR DESCRIPTION

A. DATASET COLLECTION AND PRE-PROCESSING

The dataset on online learning courses is collected from the kaggle website. The dataset is in the excel format. The collected data set is being pre-processed.

Dataset is being filtered according to the requirements of the final application. The attributes of the processed dataset are course title, number of participants, number of certificates, rating and launch date.

B. CLASSIFICATION

The processed dataset of online courses are being exported to MATLAB. MATLAB is a powerful software used for numerical computing. It is used for implementation of algorithms. In this project, k-NN algorithm is used for classification of the online courses. The numerical attributes are being picked and is subjected to certain formulae to obtain a specific value.

$$Value(i,j)=Certified(i,j)/Participants(i,j)*100$$

Value=percent of students certified based on number of participants

Certified= No.of students certified

Participants=No.of students participated

The percentage of students certified based on the number of participants is initially calculated using the above formula. Using the launch date, the month difference from current date is calculated. The month difference is finally incorporated into the Value for getting the appropriate result based on the time constraints.

$$Result(i,j)=Value(i,j)/monthDifference*100$$

Result=Value evaluated including month difference

Value=percent of students certified based on number of participants.

MonthDifference =Number of months from launch date.

Finally the maximum value from the result is obtained and it is being considered for percentage value. All the values in the result is converted into percentage based on the maximum value.

Classification is done based on the percent value. The training dataset determines the class of the course. The training dataset has been programmed in such a way that it classifies the courses as peak course, moderate course or non-peak course based on the final percentage value. The final classified data is exported to the excel sheet.

C. VISUALIZATION

Tableau is a powerful visualizing tool which is currently being used in industries. The classified dataset is being imported to Tableau software. The dataset is finely visualized using various features available in the software such as color, size, label and detail. Customised program have also been implemented using calculated field for unique colouring of courses for different ratings. The final visual narrative is saved.

D. STORAGE AND RETRIEVAL

Wamp server is used for the storage and retrieval of the final visual narrative in form of a web application. Wamp server includes SQL and PHP. SQL is a high speed database, while PHP is a scripting language that can be used to access data from the database. A login page is created and where student can login into the web application. If the student has proper authentication with required username and password finally the students will be directed into the page where the visual narrative is being displayed.

VI. RESULTS AND DISCUSSION

The categorised dataset is being visualised using the tableau software. The visual narrative is being saved. The visual narrative is made available to the students through a web application which consists of a login page.The students can login with authenticated username and password. They will be directed to the webpage consisting of the visual narrative as shown in Figure 1.
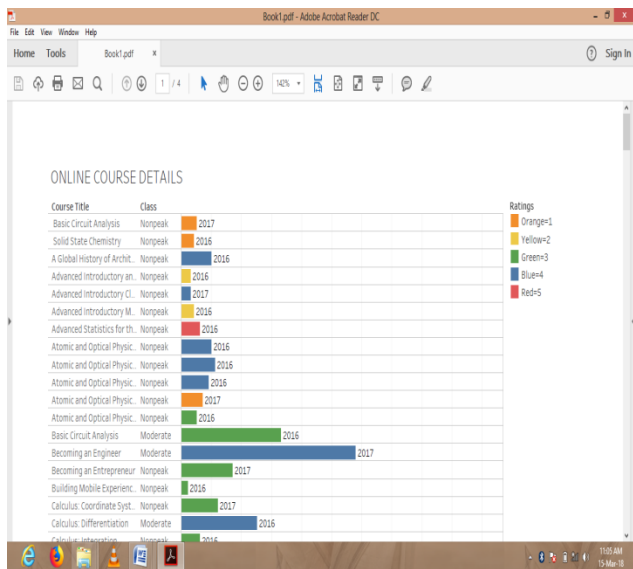
Figure 2. This shows the visual representation of the online courses.

VII.   CONCLUSION

Promotion of the participation of students in online learning environments is one of the active research field. Online learning environments are growing rapidly and are becoming very popular. There are few existing works on promoting student participation within online learning communities by means of information visualization to reflect students progress as well as their contribution towards learning activities. There are many number of online courses available on various forums. Major awareness is required to guide the students for choosing appropriate courses and to know the details and status of that courses. Awareness is created among students by visualizing the categorized dataset about online courses.

VIII. REFERENCES

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