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# DATA MINING AND FEATURE ANALYSIS OF COLLEGE STUDENT'S CAMPUS NETWORK BEHAVIOR

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**Abstract**

The rise and promotion of big data methods enables teachers to understand the behavior patterns of students in a timely and accurate manner, especially to find out the groups of students that need to be focused on in time, and to help promote the student affairs management from empirical qualitative knowledge to scientific quantitative analysis. This paper applies the clustering method of data mining to analyze the campus network behavior of 3,245 students in a certain grade of B university, obtains a total of 23.843 million Internet access data in 4 years. The result shows 4 groups of students with different characteristics of Internet access, finds 350 students with large network usage. Achievements and other aspects of performance of these students are affected. This study carried out data mining of student campus network behavior, which can be used as a practical operation casefor student affairs management data mining, providing effective data support for the accurate and scientific development of student affairs management.

**Keywords**- Data mining, Student Network Behavior; Big Data

## I INTRODUCTION

A major problem for student affairs management is the contradiction between the limited energy of student counselors and the diversity of student behaviors, which results in many potential problem students losing the opportunity for early intervention. Since the beginning of the 21st century, the rapid development of information technology in education and the construction of digital campuses has made it possible for student counselors to conduct quantitative analysis of student school behaviors, especially

to provide early warning to students who may have problems, so that the contradiction could be alleviated by applying the analysis and early warning methods.

As contemporary college students who grew up in the Internet era, their daily life, learning and thinking are deeply influenced by the Internet. This provides us with the possibility to understand their campus network behavioral characteristics through big data. How to mine useful information for student counsellors from massive data in the explosive growth of data categories and data scales, is a challenge for current student counsellors, also an important opportunity to conduct work by new means.

This study starting from the actual work problems and was conducted based on the network behavior data of B college students, combining big data thinking and big data mining methods, researching the characteristics of college students' network behavior rules, and detecting the students who need pay close attention because the large amount of campus network usage. This study could also carry out as a practical case of student work data mining for reference

## II LITERATURE SURVEY

Many research studies have been done in educational data mining to predict the students' performance. In [8] the Decision Tree (DT) algorithm was used to predict the performance of engineering students. Authors gathered data around 340 students to predict their performance in their first year exam. The accuracy of model generated was 60% in their training set. In [9] the authors used WEKA data mining software for the prediction of final student mark based on parameters in two different datasets. Each dataset contains information about different students from one college course in the past fourth semesters. The IBK shows the best accuracy among other classifiers. In [10] the author presented a reviews of previous research works done on students' performance prediction, analysis, early alert and evaluation by using different methods of data mining. In [11] the authors measuring student performance using DT classification techniques and used artificial neural network to build classifier models. The work processed based on the several attributes to predict the performance of the students. Analyzing the weakness and strength of student which may be helpful to improve the performance in future. This finding indicates the effectiveness of using data mining techniques in course evaluation data and higher education mining. In [12] the authors represents a study that will be helped to the students and the teachers to improve the result of the students who are at the risk of failure. Information's like Attendance, Seminar and assignment marks were collected from the student's previous database, to predict the performance at the end of the semester. The authors used Naïve Bayes classification algorithm that shows a highest accuracy compared to other classification algorithms. The researchers in

[13] conducted a comparative research to test multiple decision tree algorithms on an educationa dataset to classify the educational performance of students. The study mainly focuses on selecting the best decision tree algorithm from among mostly used decision tree algorithms, and provide a benchmark to each one of them and found out that the Classification and Regression Tree method worked better on the tested dataset, which was selected based on the produced accuracy and precision using 10-fold cross validations. Researchers in [14] provided an overview on the data mining techniques that have been used to predict students' performance and also it focused on how the prediction algorithm can be used to identify the most important attributes in a student's data. Under the classification techniques, Neural Network and Decision Tree are the two methods highly used by the researchers for predicting students' performance. Authors in [15] applied Data Mining techniques to find and evaluate future results and factors which affect them. The analysis was performed by discovering the Association rules for the same using FP Growth Algorithm which were sorted by Lift Metric. This was followed up by Classification through Rule Based Induction Method.

## III EXISTING SYSTEM

Many research studies have been done in educational data mining to predict the students' performance. In [8] the Decision Tree (DT) algorithm was used to predict the performance of engineering students. Authors gathered data around 340 students to predict their performance in their first year exam. The accuracy of model generated was 60% in their training set. In [9] the authors used WEKA data mining software for the prediction of final student mark based on parameters in two different datasets. Each dataset contains information about different students from one college course in the past fourth semesters. The IBK shows the best accuracy among other classifiers. In [10] the author presented a reviews of previous research works done on students' performance prediction, analysis, early alert and evaluation by using different methods of data mining. In [11] the authors measuring student performance using DT classification techniques and used artificial neural network to build classifier models. The work processed based on the several attributes to predict the performance of the students. Analyzing the weakness and strength of student which may be helpful to improve the performance in future. This finding indicates the effectiveness of using data mining techniques in course evaluation data and higher education mining

## IV PROPOSED SYSTEM

Data mining is the practise of obtaining relevant information from huge, noisy, fuzzy, and randomly generated unstructured data collections [4]. In conventional data mining, which

concentrates on traditional data, data points serve as the main analytical unit. By adapting traditional methodologies to functional data processing, studies have been done to mine functional data. These works [5, 6] laid the theoretical foundation for this inquiry. The principal component analysis (PCA)-derived coefficient vectors for functional data were used in this study's clustering analysis. Let's start by discussing the advantages of the proposed system: By examining their demographic data, we may find out more about the students' campus network usage patterns and pinpoint the group of students whose extensive usage calls for particular attention.

***Advantages***

The proposed system for data mining and feature analysis of college students' campus network behavior aims to overcome the limitations of existing systems. Key components and features of the proposed system include:

- Data Mining Techniques: The system applies data mining techniques, such as clustering and classification, to identify patterns and trends in student network behavior.
- Anomaly Detection: The system includes anomaly detection mechanisms to identify suspicious or unauthorized activities on the network.
- Resource Allocation: Optimization of network resources based on usage patterns and user needs to improve network performance.
- Privacy Controls: Implementation of privacy controls and ethical data handling to ensure the protection of students' data and privacy.
- Usage Reports: Generation of usage reports and insights for both educational institutions and students to promote responsible digital citizenship.

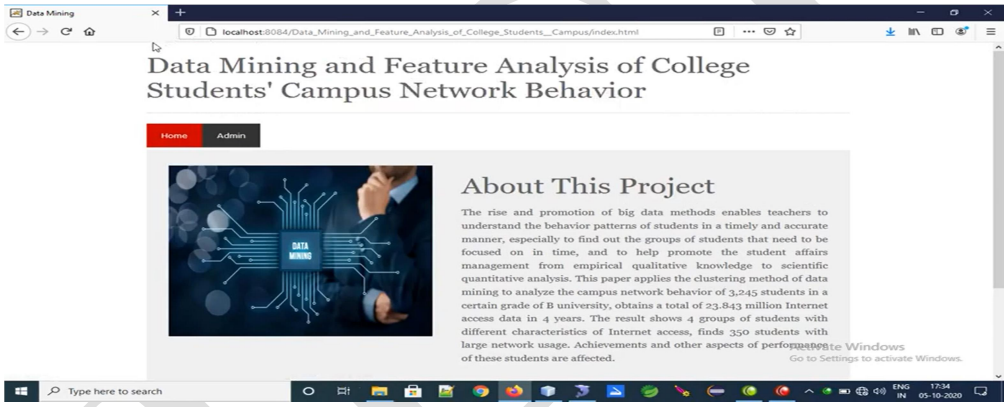
## V IMPLEMENATION

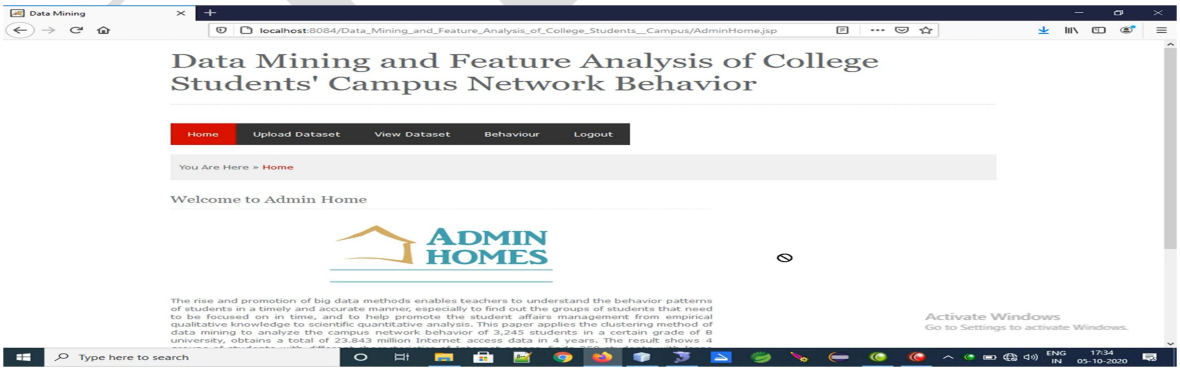
- ***User registration*:** In this module, the user who is the officer in this case registers to the blockchain server.
- ***User login*:** The user login module lets the officer login to the account that he created on the

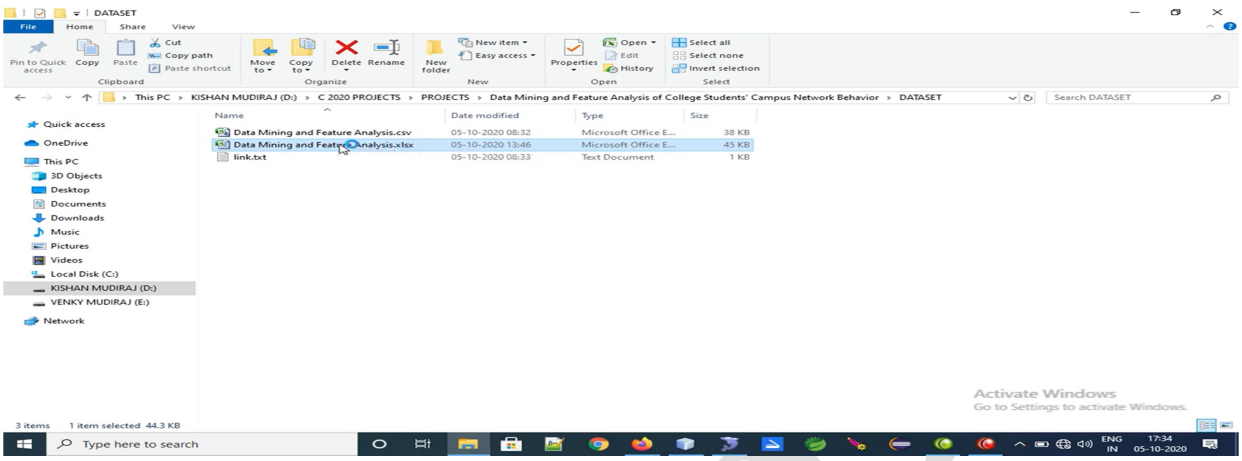
blockchain server.

- ***Add evidences*:** By using add evidences module, the officer can add the evidences found by the forensic department in the crime area.
- ***View evidences*:** In view evidences module, the officer or another officer of the department with whom the details are shared can view the evidences added of different crimes

## VI RESULTS

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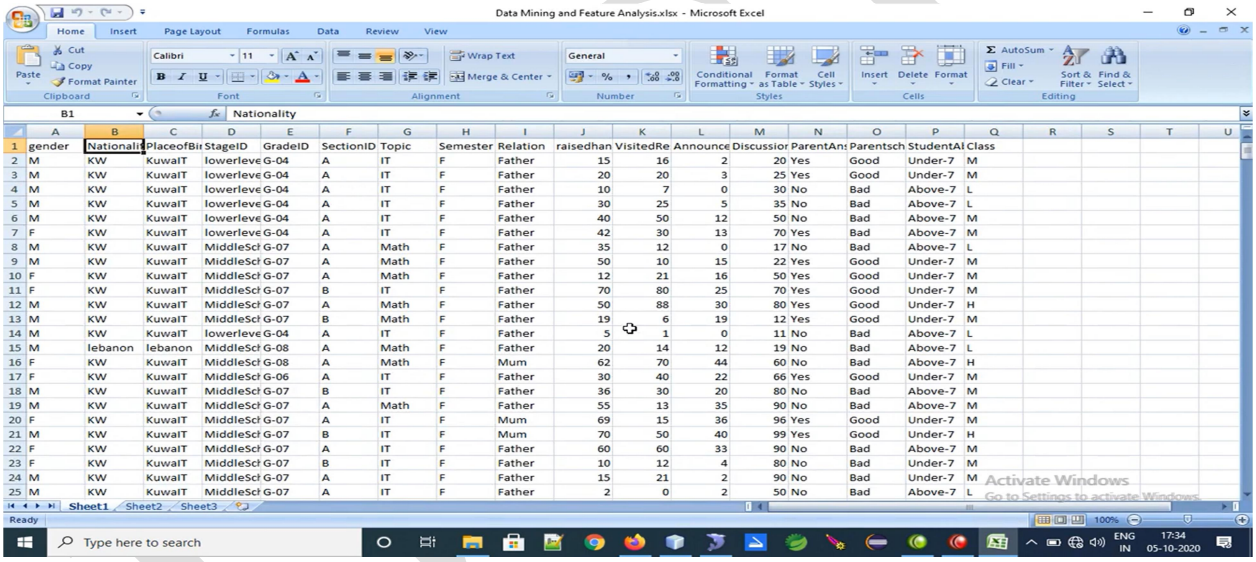
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Sheet1
Sheet2
Sheet3
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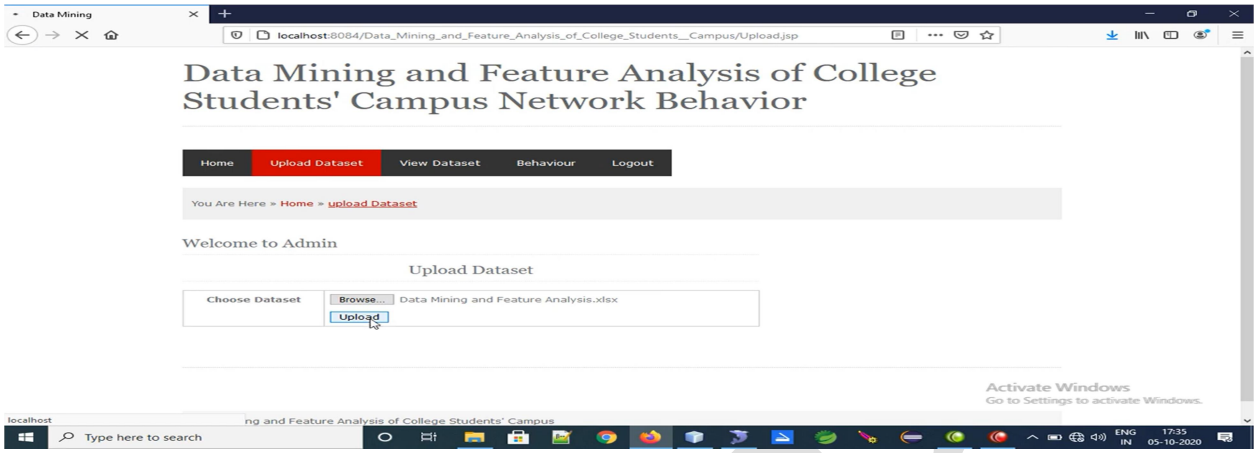
Data Mining
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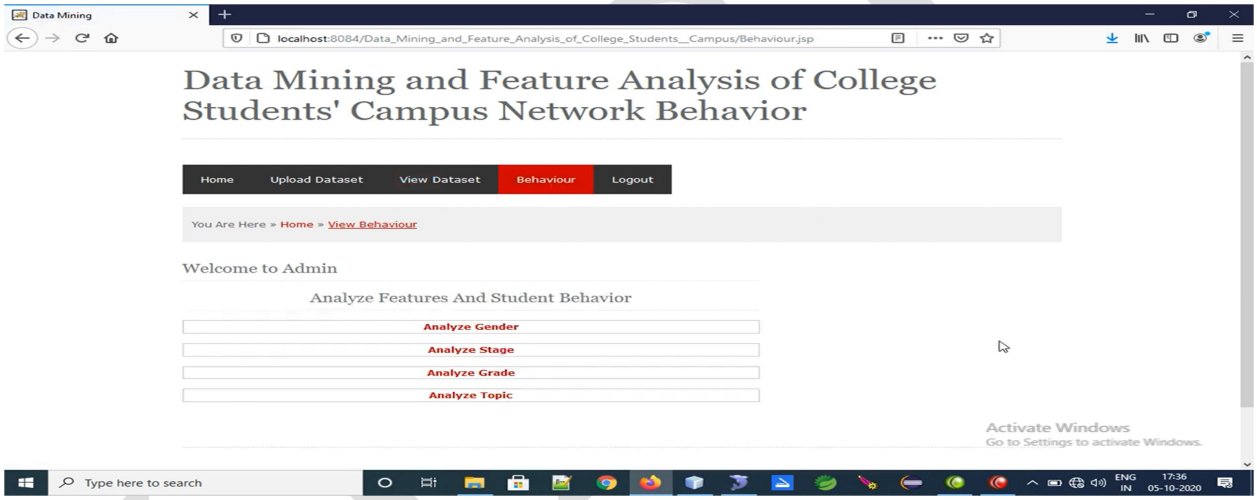
Data Mining and Feature Analysis of College Students' Campus Network Behavior
Home
Upload Dataset
View Dataset
Behaviour
Logout
You Are Here » Home » upload Dataset
Welcome to Admin
Upload Dataset
Choose Dataset
Browse...
Data Mining and Feature Analysis.xlsx
Upload
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
IN
17:35
05-10-2020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Data Mining and Feature Analysis of College Students' Campus Network Behavior
Home
Upload Dataset
View Dataset
Behaviour
Logout
You Are Here » Home » View Behaviour
Welcome to Admin
Analyze Features And Student Behavior
Analyze Gender
Analyze Stage
Analyze Grade
Analyze Topic
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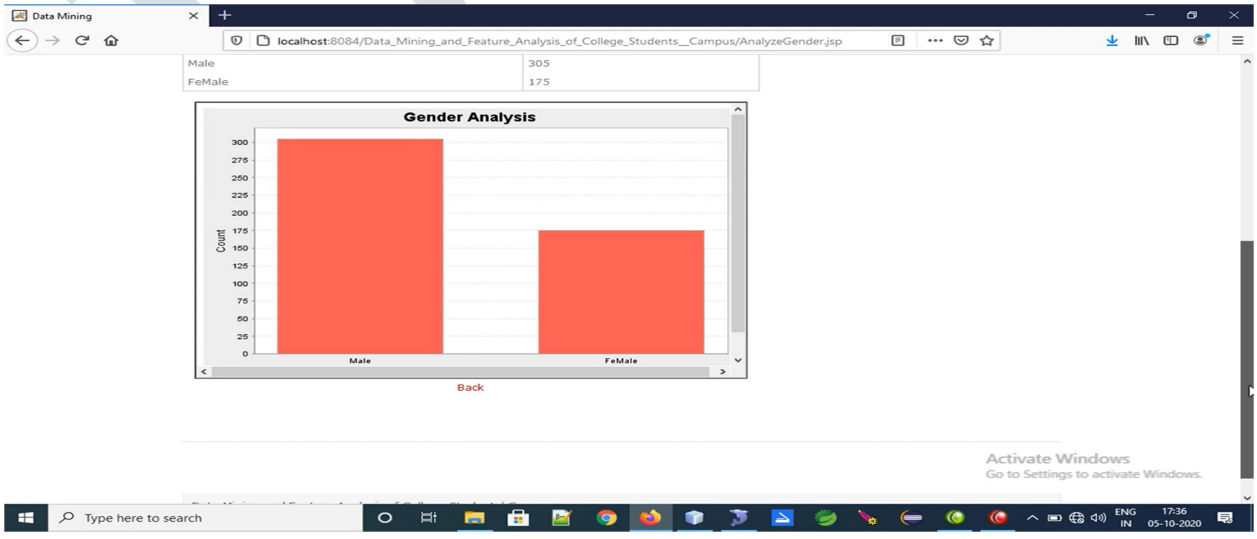
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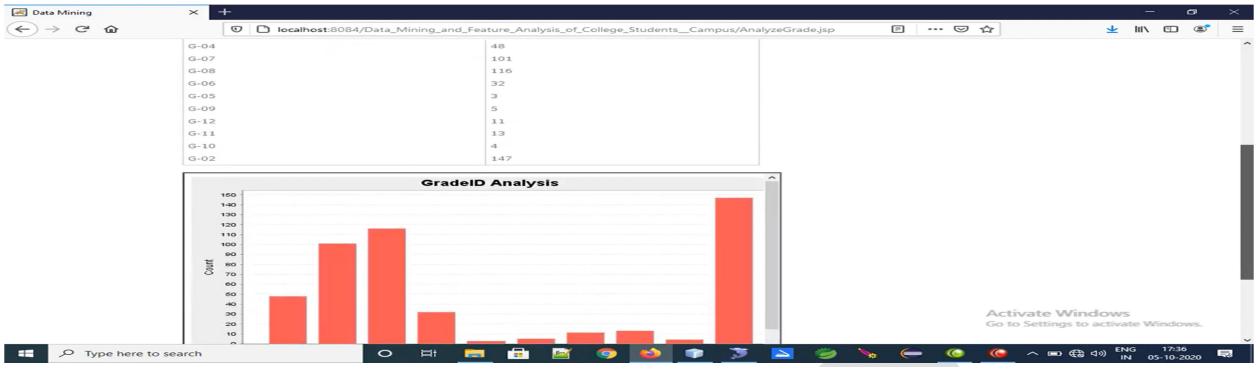
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G-07 101
G-08 116
G-06 32
G-05 3
G-09 5
G-12 11
G-11 13
G-10 4
G-02 147
GradeID Analysis
Count
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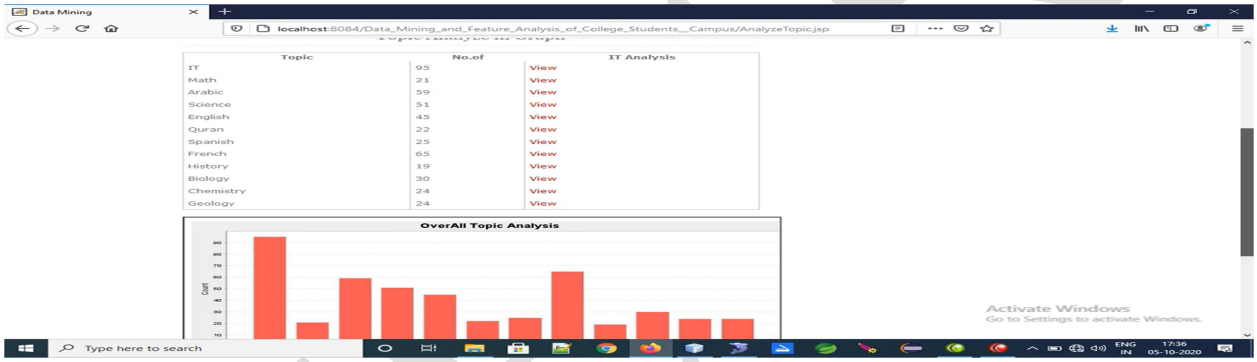
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Math 21 View
Arabic 59 View
Science 51 View
English 45 View
Quran 22 View
Spanish 25 View
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Biology 30 View
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OverAll Topic Analysis
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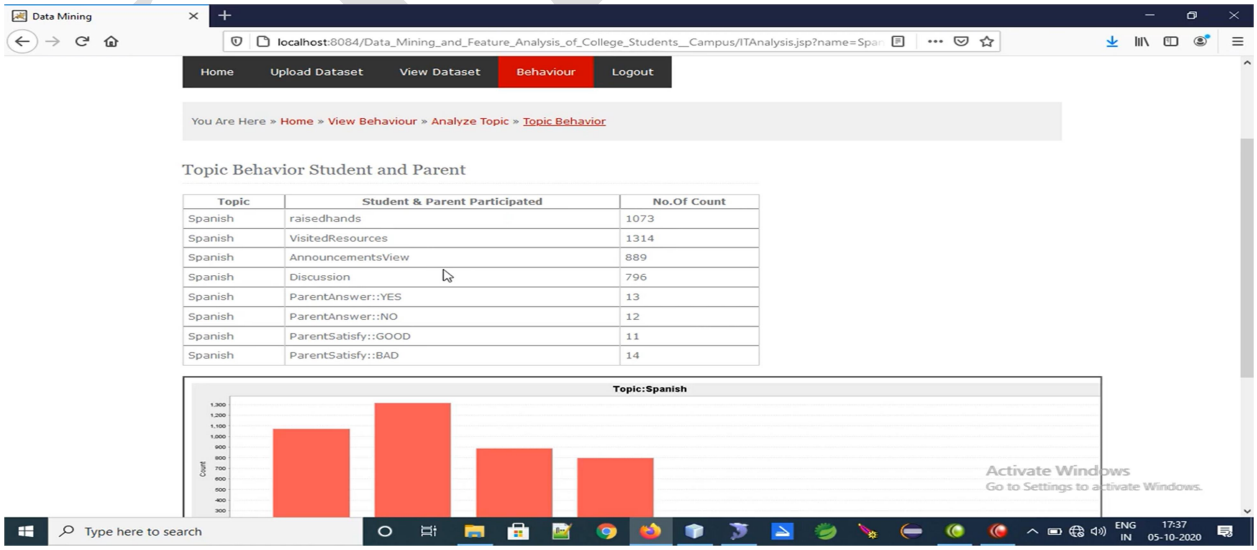
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Home
Upload Dataset
View Dataset
Behaviour
Logout
You Are Here » Home » View Behaviour » Analyze Topic » Topic Behavior
Topic Behavior Student and Parent
Topic | Student & Parent Participated | No.Of Count
Spanish | raisedhands | 1073
Spanish | VisitedResources | 1314
Spanish | AnnouncementsView | 889
Spanish | Discussion | 796
Spanish | ParentAnswer::YES | 13
Spanish | ParentAnswer::NO | 12
Spanish | ParentSatisfy::GOOD | 11
Spanish | ParentSatisfy::BAD | 14
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## VII CONCLUSION

Student campus behavior data mining can help teachers and counselors engaged in student affairs management to objectively and timely understand the status and behavior of student groups, and target students with potential problems that need attention. However, the data reveals only "effects". "Cause" also requires face-to-face communication. Student counselor work is essentially a people's work. The exchange of ideas and collisions is an area where data is difficult to describe. Therefore, it is necessary to dialectically apply data mining results to make use of big data technology supports the data of student work, and constantly improves the professional and scientific level of student counselor work

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