

**Batch - 31**

**Research – Internship**

Title: Education Process Mining (Learning Analytics Method)

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**Information of the Data Set:**

The data set describes about the study carried over a group of 115 students of first-year from University of Genoa.

The study was carried over a simulation environment named Deeds (Digital Electronics Education and Design Suite) which is used for e-learning in digital electronics.

The environment provides learning materials through specialized browsers for the students, and asks them to solve various problems with different levels of difficulty.

**Objective :**

From the Study conducted we can derive conclusions about the Student

behaviour towards e-learning and how a student performs in each

session

Feature Information:

Session: It shows the number of laboratory session from 1 to 6.

Student Id: It shows the Id of student from 1 to 115.

Exercise: It shows the Id of the exercise the student is working on. Each session contains 4 to 6 exercises, shown as 'Es\_# of the session\_# of the exercise' (e.g. Es\_1\_2: exercise 2 of session 1).

'Es' with no number means the student has not started the exercise yet.

Activity: The activities are labeled based on the title of web pages that are on focus / in the view of the student. To ensure anonymity, we did not publish the exact name of visited

pages by the students thus renamed and augmented the pages into 'activity' names. To read about the details of activity labels, see 'activities\_info.txt'.

start time: It shows the start date and time of a specific activity with the format: dd.mm.yyyy hh:mm:ss

End time: It shows the end date and time of a specific activity with the format: dd.mm. yyyy hh:mm:ss

Idle time: It shows the duration of idle time between the start and end time of an activity in milliseconds.

Mouse wheel: It shows the amount of mouse wheel during an activity.

Mouse wheel click: It shows the number of mouse wheel clicks during an activity.

Mouse click left: It shows the number of mouse left clicks during an activity.

Mouse click right: It shows the number of mouse right clicks during an activity.

Mouse movement: It shows the distance covered by the mouse movements during an activity.

Keystroke: It shows the number of keystrokes during an activity.

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| --- | --- |
| Data Dimension |  |
| # of records | (230319, 18) |
| # of attributes | 18 |
| Type of class attribute |  |
| # of categorical attributes | 9 |
| # of numeric attributes | 7 |
| # of missing values | Nil |
| % missing values | Nil |
| #of attributes with greater than 20% Missing Value | Nil |
| #of rows with greater than 20% Missing Values | Nil |
| #of Levels in Categorical Attribute <Attribute Name> | Session (6 levels), Student ID (115), Exercise (29), Activity (99) |

**Descriptive Statistics:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Descriptive Statistics** |  |  |  |  |  |
| Attribute name | Average | Median | Standard Deviation | Min value | Max value |
| mouse wheel | 2.744 | 0 | 27.13943466 | 0 | 2904 |
| keystroke | 6.279808 | 0 | 50.96044486 | 0 | 4754 |
| idle time | 6.279 | 8.00E+01 | 4.49739E+11 | -2.06E+06 | 7244735922 |
| mouse click right | 0.336 | 0 | 3.017590789 | 0 | 168 |
| mouse click left | 7.068 | 2 | 21.54573022 | 0 | 1096 |
| mouse movement | 414.33 | 138 | 1272.392219 | 0 | 85949 |

There are also Final Grades and Logs of Students:

The Final Grades Data has the grades of all the students for different activities and Total Grade.

|  |  |
| --- | --- |
| Data Dimension |  |
| # of records | (94, 18) |
| # of attributes | 19 |
| Type of class attribute |  |
| # of categorical attributes | 1 |
| # of numeric attributes | 17 |
| # of missing values | Nil |

**Logs data has the Attendance of Students for each Session**

|  |  |
| --- | --- |
| Data Dimension |  |
| # of records | (115, 5) |
| # of attributes | 5 |
| Type of class attribute |  |
| # of categorical attributes | 4 |
| # of missing values | Nil |

|  |  |
| --- | --- |
| **Attribute name** | **# of unique levels** |
| Session | 6 |
| Student ID | 115 |
| Exercise | 29 |
| Activity | 99 |