STUDENT PERFOMANCE AND ENGAGEMENT PREDICTION

SADIA Data Bootcamp

Submitted By

Abdullah Aldaiwsh

Contents

Objective

- Students engagements in classes activities effect their overall engagement
- Students grade on different activities effect their total grades
- Students engagements in classes activities effect total grades
- Predict student who need support on early stages

The Data

The Data

Student Engagement

Datasets used as part of the OC2 lab's work on student engagement in eLearning environments

Student ID	# Logins	# Content Reads	# Forum Reads	# Forum Posts	# Quiz Reviews before submission	Assignment 1 lateness indicator	Assignment 2 lateness indicator	Assignment 3 lateness indicator	Assignment 1 duration to submit (in hours)	Assignment 2 duration to submit (in hours)	Assignment 3 duration to submit (in hours)	Average time to submit assignment (in hours)
student000000	143	344	58	0	3	0	0	0	178.166667	92.716667	116.166667	129.016667
student000001	70	342	0	0	4	0	0	0	294.033333	196.083333	217.750000	235.955556
student000002	42	219	0	0	3	0	0	0	169.600000	235.733333	260.333333	221.888889

The Data

Student Performance

Datasets used as part of the OC2 lab's work on student performance in eLearning environments

Student ID	Quiz01 [10]	Assignment01 [8]	Midterm Exam [20]	Assignment02 [12]	Assignment03 [25]	Final Exam [35]	Course Grade	Total [100]
student000000	95	91	70	90	84	64	85	85
student000001	85	76	65	61	73	64	76	76
student000002	85	41	73	61	73	61	73	73

Student engagement prediction

K-Means

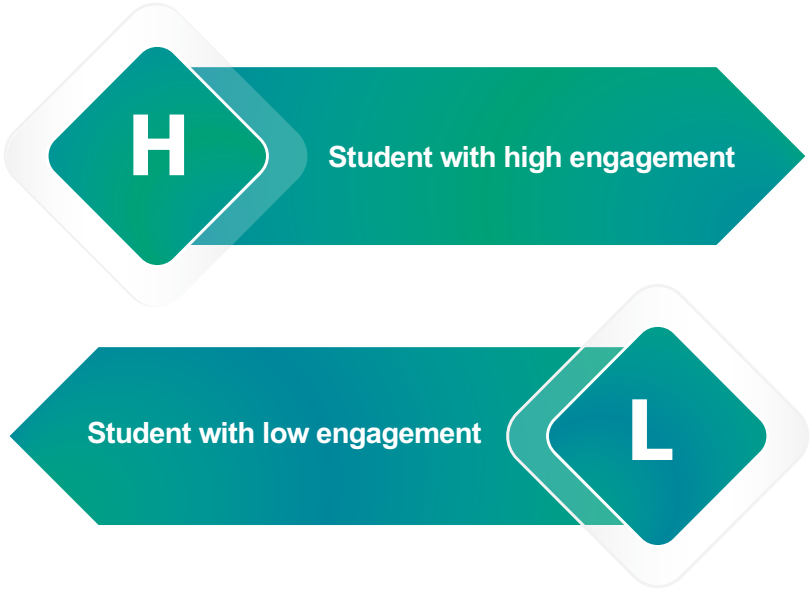
Definition

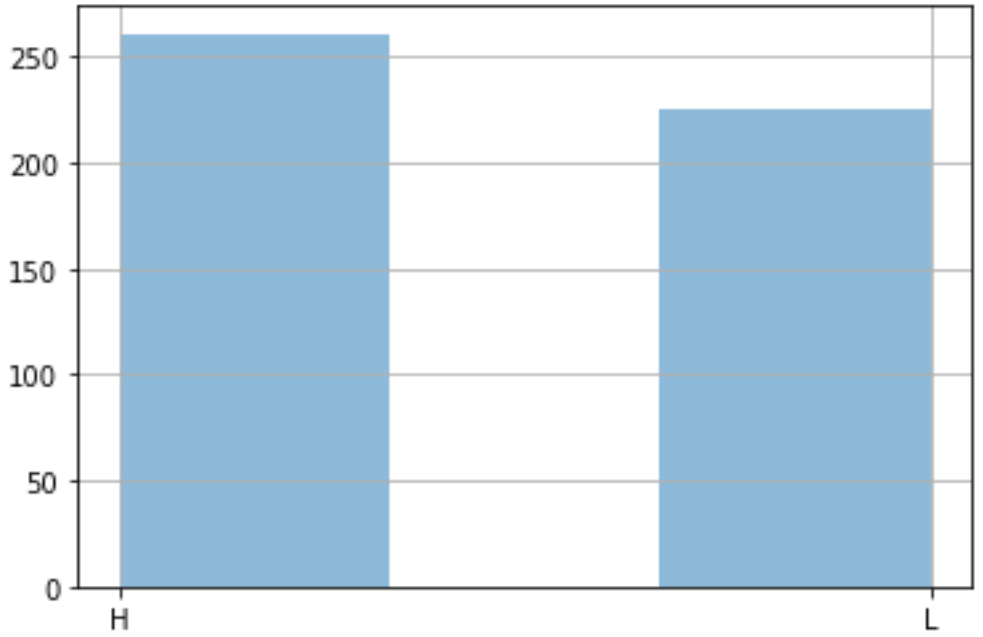
Unsupervised algorithms make inferences from datasets using only input vectors without referring to known, or labelled, outcomes

Idea

To predict engagement level of student by classify students ether having high or low engagement

Predict student engagement





Student performance prediction

K-Means

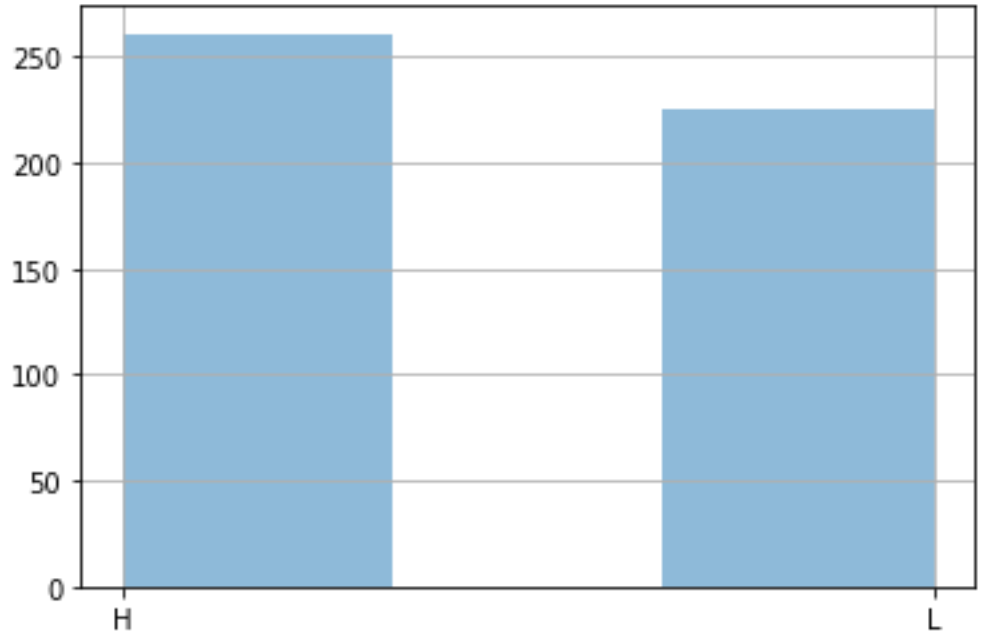
Definition

Unsupervised algorithms make inferences from datasets using only input vectors without referring to known, or labelled, outcomes

Idea

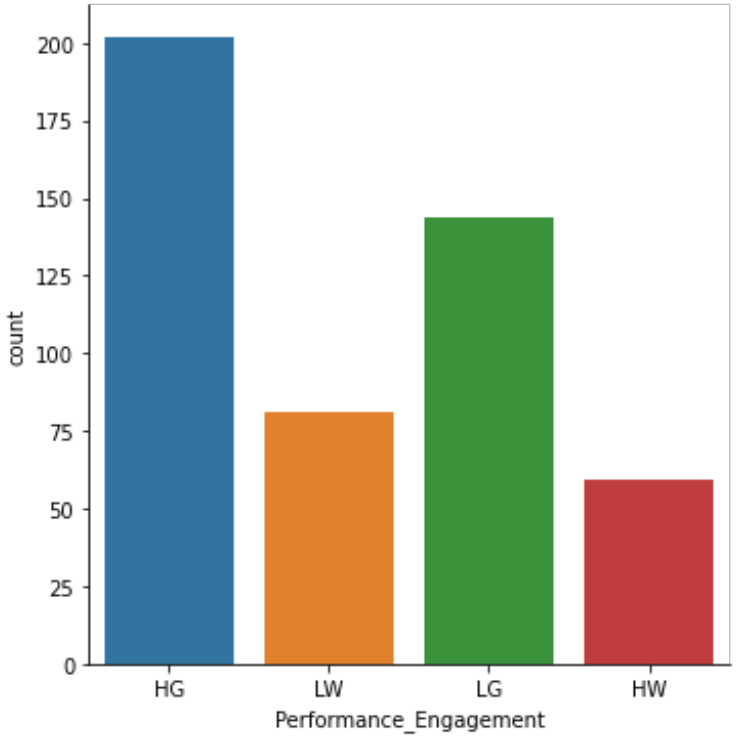
To predict performance level of student by classify students that have good or week performance

Predict student engagement



Students require attention

Students Engagement & Performance




```
Engagement Level  Performance
H                 G              202
                  W               59
L                 G              144
                  W               81
dtype: int64
```

K-NN

Definition

Supervised algorithms solve both classification and regression problems that relies on labeled input data to learn a function that produces an appropriate output

Idea

To predict performance and engagement of student by classify students that have good or week performance with high or low engagement

K-NN

```
#show first 5 model predictions on the test data
classifier.predict(X_test)[0:5]
```

```
array(['LW', 'LW', 'HW', 'HG', 'HG'], dtype=object)
```

	precision	recall	f1-score	support
HG	0.95	1.00	0.98	41
HW	1.00	0.83	0.91	12
LG	0.97	0.97	0.97	29
LW	0.94	0.94	0.94	16
accuracy			0.96	98
macro avg	0.96	0.93	0.95	98
weighted avg	0.96	0.96	0.96	98

References:

Abdallah Moubayed, MohammadNoor Injadat, Abdallah Shami, Ali Bou Nassif, Hanan Lutfiyya. (2020). Student Performance and Engagement Prediction in eLearning datasets. IEEE Dataport. https://dx.doi.org/10.21227/4xkr-0f88

Q &A