SEMESTER 2, 2020/2021 SEM2 CSCI 2304
Section 01 INTELLIGENT SYSTEMS
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The Psychological Impact of COVID-19 Among Jordanian University Students

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Contents

Problem Statement

The sudden change of teaching and learning mode, has increased the anxiety level and created extreme stress to the students. Added with the lockdown, where students are not able to do their normal physical activities. Because of that reasons many students feel depressed and its affect their academic performance and even it is associated with the increases of suicidal attempts.

So due to that reason, we creating a machine learning program to predict and analyze students that has psychological issues impacted by E-learning tools during the Covid-19 lockdown , here we are implementing and comparing Multiple Linear Regression and Bayesian Linear Regression models on Microsoft Azure.

Objectives

- To collect data about the Jordanian University Students experience during this pandemic period.
- To know whether the Jordanian University Students' mental health is more critical during the Covid-19 lockdown.
- To predict the likeliness of mental health disorders forming amongst Jordanian University Students during the Covid-19 lockdown.
- To analyze students that has psychological issues impacted by E-learning tools during the Covid-19 lockdown.

What's Machine Learning

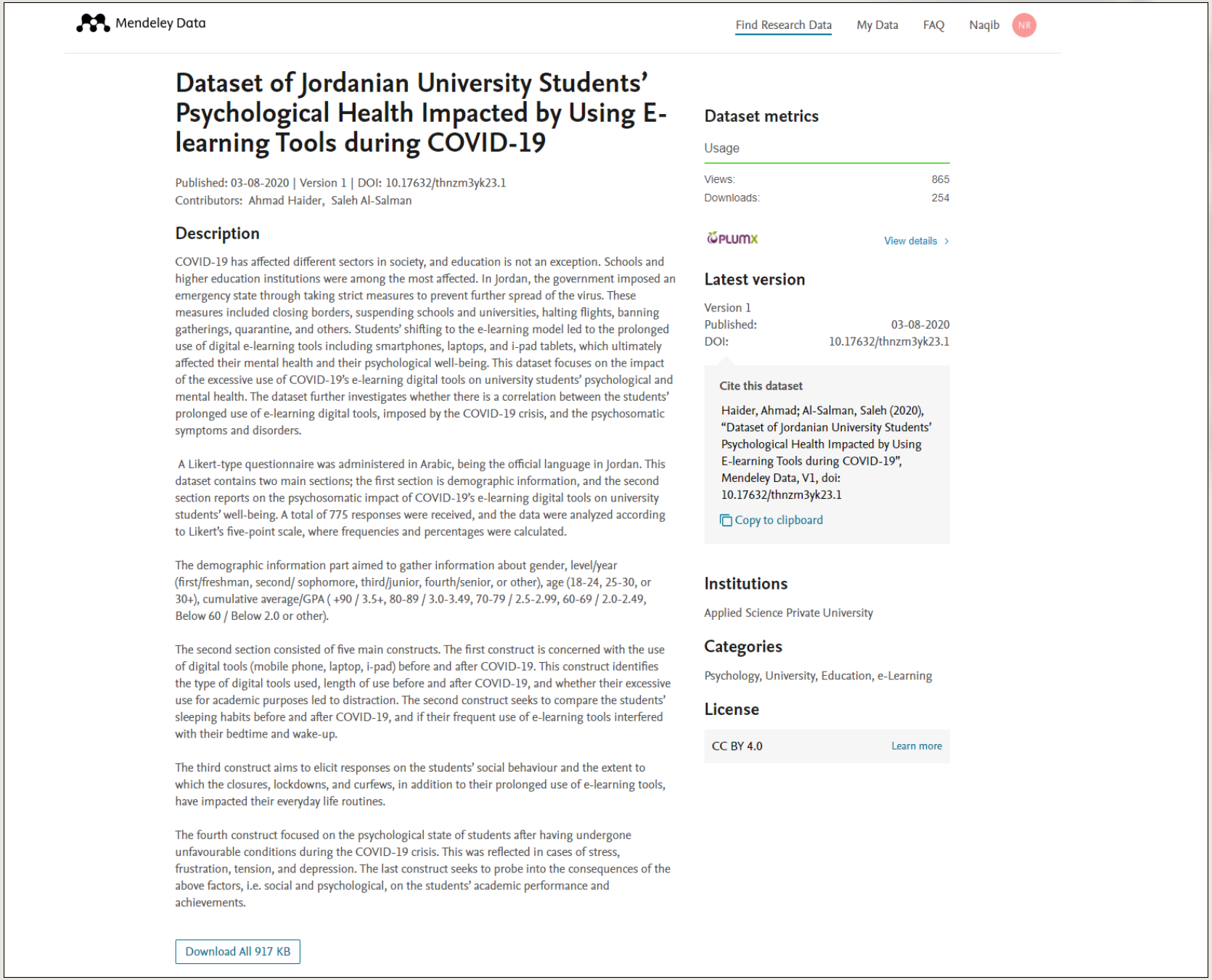
Machine learning is a subfield of artificial intelligence (AI) and computer science that focuses on using data and algorithms to mimic the way people learn, with the goal of steadily improving accuracy.

What's Linear Regression

- The regression can be used to determine the strength of an independent variable's influence on a dependent variable.
- It may be used to predict the impacts of changes. In other words, regression analysis enables us to determine how much the dependent variable changes when one or more independent variables are changed.
- Trends and future values are predicted through regression analysis. Point estimates can be obtained using regression analysis.

Data Set

Dataset is retrieved from Mendeley Data



Mendeley Data

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Dataset of Jordanian University Students' Psychological Health Impacted by Using E-learning Tools during COVID-19

Published: 03-08-2020 | Version 1 | DOI: 10.17632/thnzm3yk23.1
Contributors: Ahmad Haider, Saleh Al-Salman

Description

COVID-19 has affected different sectors in society, and education is not an exception. Schools and higher education institutions were among the most affected. In Jordan, the government imposed an emergency state through taking strict measures to prevent further spread of the virus. These measures included closing borders, suspending schools and universities, halting flights, banning gatherings, quarantine, and others. Students' shifting to the e-learning model led to the prolonged use of digital e-learning tools including smartphones, laptops, and i-pad tablets, which ultimately affected their mental health and their psychological well-being. This dataset focuses on the impact of the excessive use of COVID-19's e-learning digital tools on university students' psychological and mental health. The dataset further investigates whether there is a correlation between the students' prolonged use of e-learning digital tools, imposed by the COVID-19 crisis, and the psychosomatic symptoms and disorders.

A Likert-type questionnaire was administered in Arabic, being the official language in Jordan. This dataset contains two main sections; the first section is demographic information, and the second section reports on the psychosomatic impact of COVID-19's e-learning digital tools on university students' well-being. A total of 775 responses were received, and the data were analyzed according to Likert's five-point scale, where frequencies and percentages were calculated.

The demographic information part aimed to gather information about gender, level/year (first/freshman, second/ sophomore, third/junior, fourth/senior, or other), age (18-24, 25-30, or 30+), cumulative average/GPA (+90 / 3.5+, 80-89 / 3.0-3.49, 70-79 / 2.5-2.99, 60-69 / 2.0-2.49, Below 60 / Below 2.0 or other).

The second section consisted of five main constructs. The first construct is concerned with the use of digital tools (mobile phone, laptop, i-pad) before and after COVID-19. This construct identifies the type of digital tools used, length of use before and after COVID-19, and whether their excessive use for academic purposes led to distraction. The second construct seeks to compare the students' sleeping habits before and after COVID-19, and if their frequent use of e-learning tools interfered with their bedtime and wake-up.

The third construct aims to elicit responses on the students' social behaviour and the extent to which the closures, lockdowns, and curfews, in addition to their prolonged use of e-learning tools, have impacted their everyday life routines.

The fourth construct focused on the psychological state of students after having undergone unfavourable conditions during the COVID-19 crisis. This was reflected in cases of stress, frustration, tension, and depression. The last construct seeks to probe into the consequences of the above factors, i.e. social and psychological, on the students' academic performance and achievements.

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Dataset metrics

Usage

Views:	865
Downloads:	254

PLUMX View details >

Latest version

Version 1

Published:	03-08-2020
DOI:	10.17632/thnzm3yk23.1

Cite this dataset

Haider, Ahmad; Al-Salman, Saleh (2020), "Dataset of Jordanian University Students' Psychological Health Impacted by Using E-learning Tools during COVID-19", Mendeley Data, V1, doi: 10.17632/thnzm3yk23.1

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Categories

Psychology, University, Education, e-Learning

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	A	B	C	D	E	F	G
1	After COVID-19: Prol	After COVID-19: Con	Prolonged use of e-le	Staying home for lor	Some students cann	I don't recommend c	Measures of lockdow
2	4	5	4	5	5	4	4
3	4	2	2	3	4	2	3
4	5	5	5	5	5	5	5
5	5	4	5	1	5	3	4
6	2	2	2	3	4	2	2
7	5	5	5	5	5	5	5

The sample data is 300 respondents, and the respondent responses is categorized into a linear scale :-

5: Strongly Agree

4: Agree

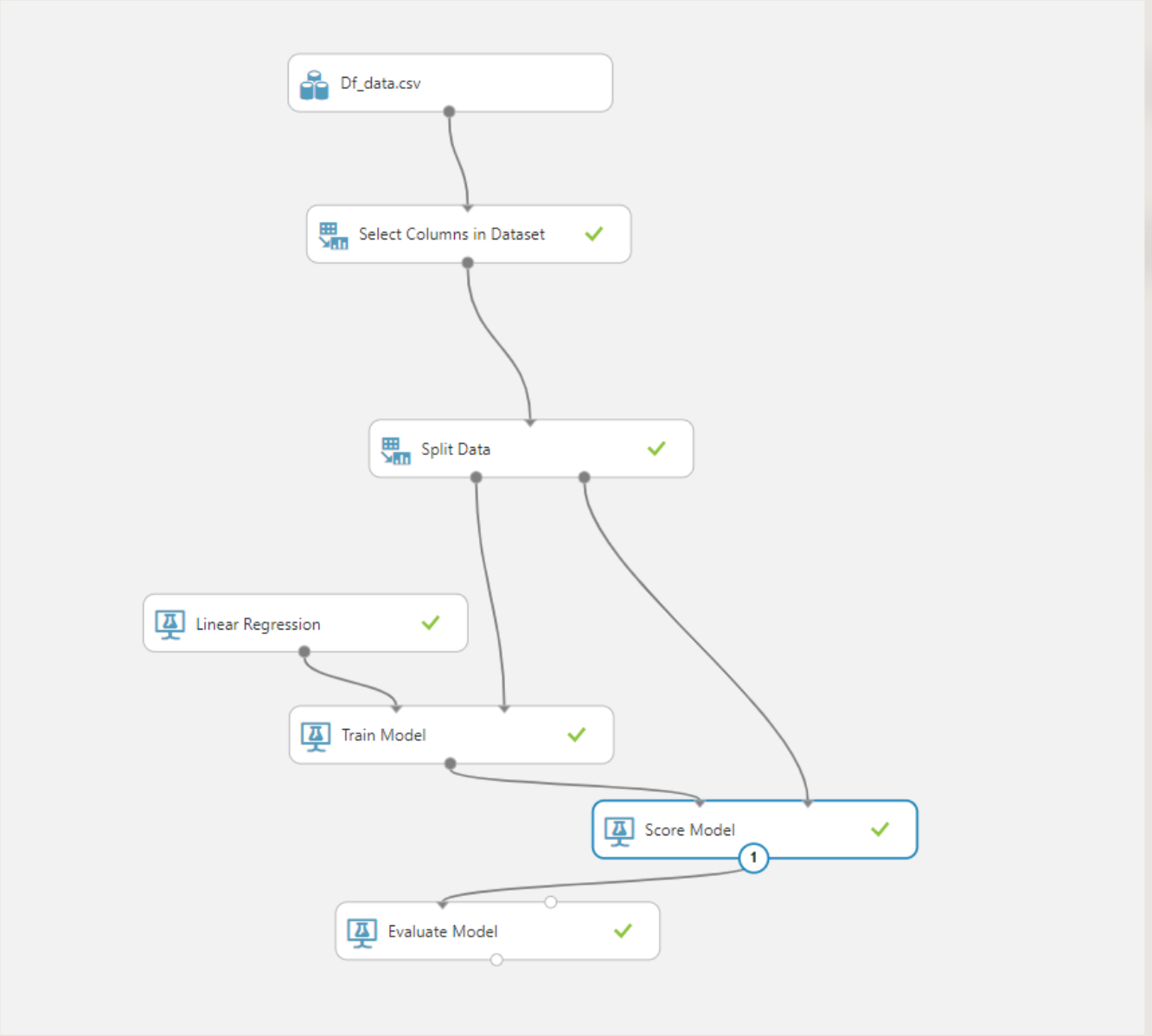
3 : Uncertain

2 : Disagree

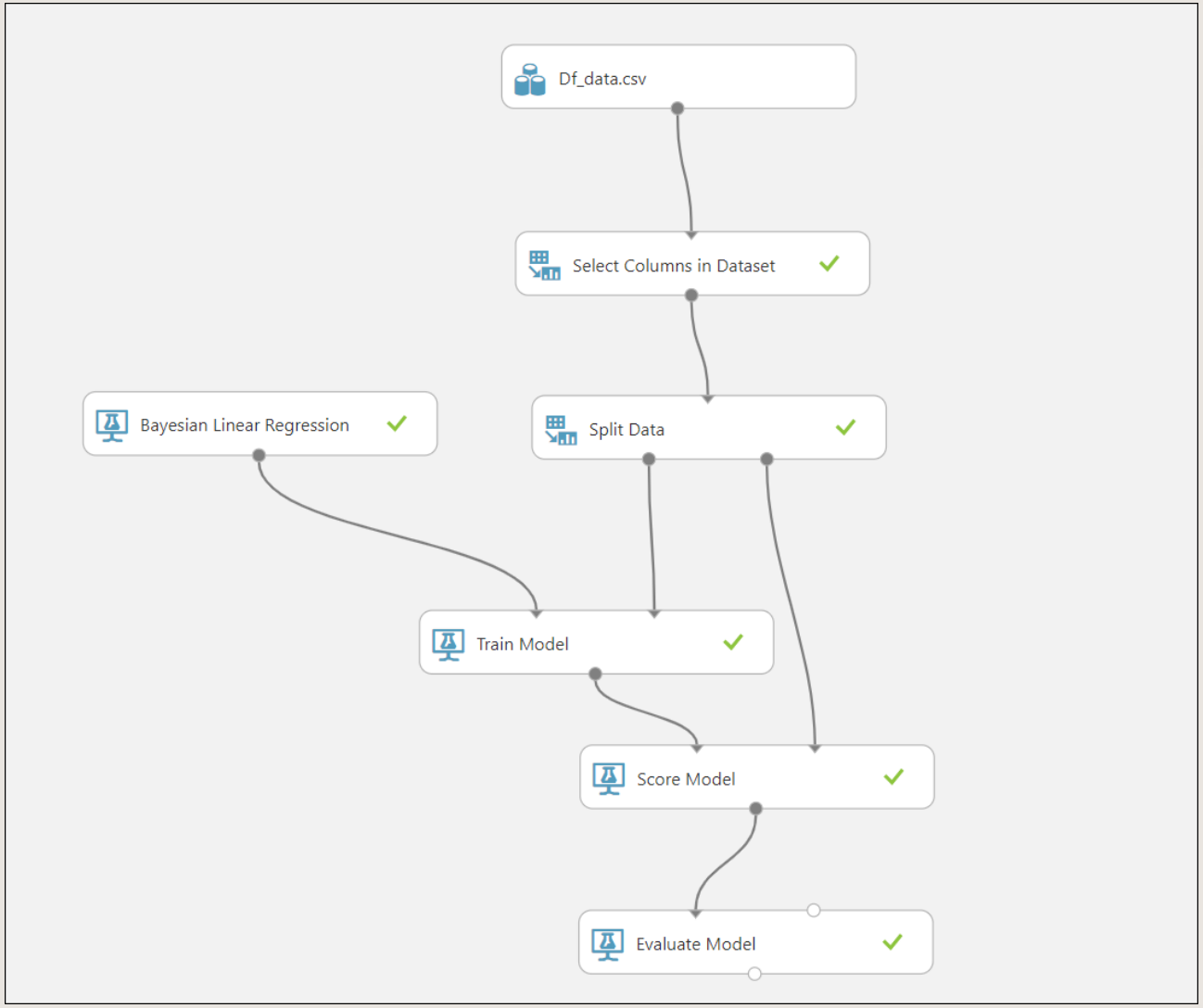
1 : Strongly Disagree

Independent Variable(s)	Dependent Variable
1. After COVID-19: Prolonged use of digital tools for learning (mobile, laptop, i-pad) affected my sleeping habits.	Measures of lockdown, closures, and quarantine, brought by COVID-19 caused stress, frustration, and depression.
2. After COVID-19: Continous exposure to electronic screens in online learning is tiring and exhausting	
3. Prolonged use of e-learning tools often leads to boredom, nervousness, and tension.	
4. Staying home for long periods of time leads to lethargy and laziness.	
5. Some students cannot afford buying all necessary digital tools, which is embarassing and frustrating.	

Multiple Linear Regression



Bayesian Linear Regression



Comparison between Models

Multiple Linear Regression		Bayesian Linear Regression
To model the linear relationship between independent variables and dependent variables	Idea	To determine the posterior distribution for the model parameters
Coefficient of Regression calculated for each predictors / independent variables	Train Model	Posterior distribution is calculated
Scored label is produced	Score Model	Scored label Mean, Standard Deviation produced
Coefficient of Determination / R squared is produced	Evaluate Model	Coefficient of Determination is produced as well as Negative Log Likelihood

Error Analysis

Machine Learning Models	Mean Absolute Error	Root Mean Squared Error	Relative Absolute Error	Relative Squared Error	Coefficient of Determination	Negative Log Likelihood
Linear Regression	0.292248	0.495091	0.404236	0.336001	0.663999	
Bayesian Linear Regression	0.292944	0.494269	0.405199	0.334887	0.665113	103.399779