PREDICITON OF STUDENT GRADES AND ALCOHOL CONSUMPTION

A PROJECT REPORT

ARTIFICIAL INTELIGENCE (ITE2010)

by

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ABSTRACT

Alcohol consumption amongst teenagers is evident in the current world scenario .Also students' grades are affected by various socio economical and psychological factors. This project aims to predict the grades of students and their alcohol consumption levels using an Artificial Neural Network. Grades and alcohol consumptions among students are factors which depend on their socio-economic status and other factors. Using the person's social factors, parents' education level, income, daily routine etc. and using machine learning algorithms the goal of the project is to be able to predict a student's grades and also the level of consumption of alcohol. The dataset has been obtained from https://www.kaggle.com/uciml/student-alcohol-consumption/data.

***KEYWORDS**: Grade prediction, Alcohol consumption prediction, Artificial Neural Networks, Feature selection.*

LITERATURE SURVEY

1) Alcohol Control Policies and Youth Alcohol Consumption: Evidence from 28 Years of Monitoring the Future

Christopher S Carpenter/ Deborah D Kloska/ Patrick O'Malley Lloyd Johnston

In this publication, the authors have done a comparative studies and analysis of minimum legal age for drinking, taxes and Tolerance level on drinking behaviors of the students. The data was collected from 1976-2003 from MTF surveys. The results were very significant and showed how students especially in high school reduced lower alcohol when there was an increase in the MLDA and, 'Zero Tolerance' laws nationwide. This concluded that laws and rules imposed by higher authorities like government can affect your alcohol consumption.

2) College Attendance and Its Effect on Drinking Behaviours in a Longitudinal Study of Adolescents

David S. Timberlake, Christian J. Hopfer, Soo Hyun Rhee, Naomi P. Friedman, Brett C. Haberstick, Jeffrey M. Lessem, John K. Hewitt

This Publication focuses on the effects of attendance in a college on drinking behaviors of students. Many adolescents who did not and did go to a college showed varied results on their alcohol consumption.

Adolescents from age 13-24 were targeted and divided into two groups where each grouped was assessed at different phases throughout the coming years depending on the various attributes like binge drinking and average alcohol consumption.

Participants who did not attend college reported more binge drinking and consumed greater quantities of alcohol as adolescents than participants who subsequently attended college.

However, the college students not only surpassed their non-college peers in alcohol use as young adults, but also exhibited a greater genetic influence on quantity of alcohol consumed per drinking episode.

3) Using Data Mining To Predict Secondary School Student Performance

Paulo Cortez and Alice Silva

In this research paper, the authors aim to use data mining and business intelligence to extract more knowledge from raw data. Here, data is collected by using school documentations and questionnaires (e.g. student grades, demographic, social and school related features). Data mining Techniques like Decision trees, NN and SVM with three input selections were used to assess the data. The results showed accurate predictions for the given student dataset. As a direct outcome of this research, more efficient student prediction tools can be developed, improving the quality of education and enhancing school resource management.

4) 5. Sweeney, M., Lester, J. and Rangwala, H., 2015, October. Next-term student grade prediction. In Big Data (Big Data), 2015 IEEE International Conference on (pp. 970-975). IEEE.

In this paper the researchers have used previous semester's details and the factorization machine (FM), a general-purpose matrix factorization (MF) algorithm to predict the student grades for the future semesters .They have used filtering algorithms on this historical dataset to predict the grades of the students in the future.

DATASET DESCRIPTION

The dataset was obtained in a survey of students perusing math and Portuguese language courses in secondary school. It contains a lot of interesting social, gender and study information about students.

PRELIMINARY CONCEPTS

Machine Learning:

Machine learning is a field of computer science that gives computers the ability to learn without being explicitly programmed by performing mathematical operations on a given dataset.

Supervised Learning:

Supervised learning is the machine learning task of inferring a function from labeled training data. The training data consist of a set of training examples. In supervised learning, each example is a pair consisting of an input object (typically a vector) and a desired output value (also called the supervisory signal).

Classification:

In machine learning and statistics, classification is the problem of identifying to which of a set of categories (sub-populations) a new observation belongs, on the basis of a training set of data containing observations (or instances) whose category membership is known.

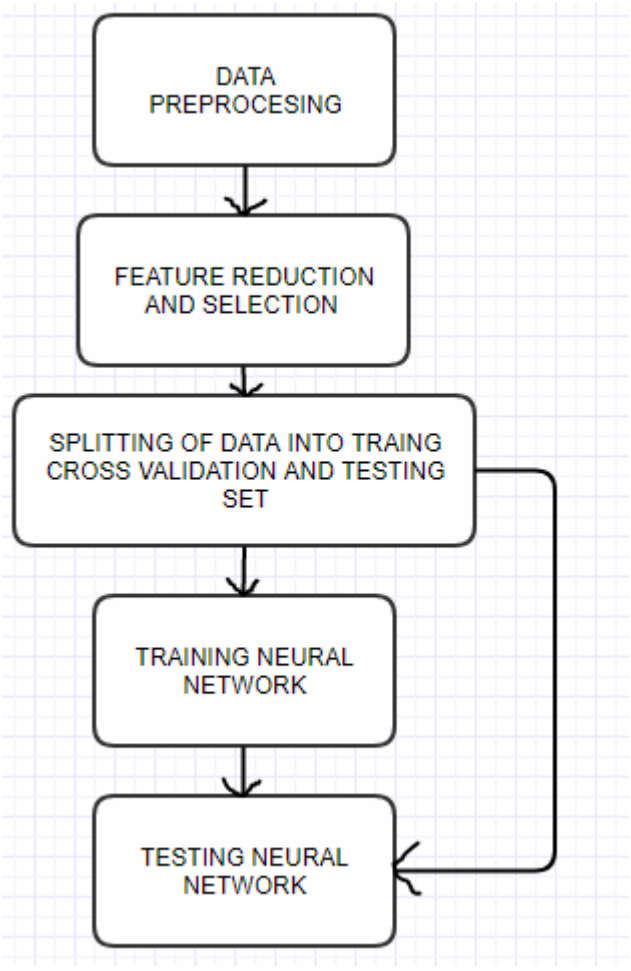
Feature Selection:

In machine learning and statistics, feature selection, also known as variable selection, attribute selection or variable subset selection, is the process of selecting a subset of relevant features (variables, predictors) for use in model construction. Principal component Analysis is one such method of feature selection. Factor Analysis is also a commonly used method.

Artificial Neural Networks:

Computational models built to mimic human mind by having nodes which mimic neurons and weighted connections used to neural connections. They can be used for classification and regression. Perceptron, Madaline, Back propagating Neural Network, Convolutional Neural Networks and Recurrent Neural Networks are types of neural networks.

ARCHITECTURE



REFERENCES

1. Carpenter, C.S., Kloska, D.D., O'Malley, P. and Johnston, L., 2007. Alcohol control policies and youth alcohol consumption: Evidence from 28 years of monitoring the future. *The BE Journal of Economic Analysis & Policy*, *7*(1).

2.Timberlake, D.S., Hopfer, C.J., Rhee, S.H., Friedman, N.P., Haberstick, B.C., Lessem, J.M. and Hewitt, J.K., 2007. College attendance and its effect on drinking behaviors in a longitudinal study of adolescents. *Alcoholism: Clinical and Experimental Research*, *31*(6), pp.1020-1030.

3. Cortez, P. and Silva, A.M.G., 2008. Using data mining to predict secondary school student performance.

4. Dash, M. and Liu, H., 1997. Feature selection for classification. *Intelligent data analysis*, *1*(1-4), pp.131-156.

5. Sweeney, M., Lester, J. and Rangwala, H., 2015, October. Next-term student grade prediction. In *Big Data (Big Data), 2015 IEEE International Conference on* (pp. 970-975). IEEE.

6. https://www.coursera.org/learn/machine-learning