Artificial neural networks: review of predictions in education, agriculture, traffic and environment engineering

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Abstract: Today predictions are necessary in a real life. Final goal is creating knowledge and knowledge base. With evidence of data growth digital universe will double every two years. One of possible solutions for analysing data is appliance of machine learning techniques. Artificial neural networks are one of data mining techniques which are described in different scenarios. This technique was used in education, agriculture, traffic and environment engineering. Regarding appliance in education the main goal was improving Moodle reporting system through application of artificial neural networks. The end-users for the application are teachers and course administrators. The second research in education is related to improving curriculum at the faculty using artificial neural network. Bearing in mind the fact that curriculum could be changed up to 20%, results which are provided by artificial neural networks give opportunity to predict number of students with different knowledge level of information technology. Artificial neural networks were also applied in agriculture, in order to predict fruit yield. Input parameters are fertilizer, date of harvest, irrigation system, number of pesticide treatments, pruning type, hall protection, land maintance, early frost, average annual temperature and average annual precipitation. Beside web-based application, the solution was integrated with platform for fruit producers, in cooperation with interested company. The same technique was applied for analysing traffic accidents. The data source is usually one of many open data platforms in Serbia which provides open machine-readable data. Regarding environment protection web-based application based on artificial neural network was developed. The input data are soot, SO2, NO2, year, municipality, measuring point and particulate matter. The predicted value is air pollution level. All applications are simple for use and provide artificial neural network results to users which do not have to have advanced IT knowledge and skills. Future research is related to appliance artificial neural networks and other data mining techniques in different fields.

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