M. Hamidinia

Civil Engineering Faculty,
Yazd University.

e-mail: hamidiniamoham-mad@gmail.com

M.M. Khabiri[*]

Associated Professor, Civil
Engineering Faculty, Yazd
University.

e-mail: mkhabiri@yazd.ac.ir

M. Mokhberi

Assistance Professor, Civil
Engineering Faculty, Esteban
University.

e-mail: mehdimokhberi@gmail.com

Identification and Presentation of Asphalt Pavement Construction Quality Control Algorithm by Data Classification Method and Artificial Neural Network

Asphalt construction *is one of the most important parameters of asphalt pavement quality that should always be carefully considered in any asphalt pavement project. The purpose of this study was to evaluate the performance of decision tree algorithm and artificial neural network in predicting mixture and field design parameters affecting pavement compaction in order to identify and control these parameters to control the compaction parameter value. In this study, we used data collected from relative asphalt compaction determination report, grain curve report and results of hot asphalt experiments and asphalt mix design report recovered from soil mechanics laboratory and using decision tree and artificial neural network algorithm have been proposed to predict the parameters affecting compaction. The results show that data with a distribution temperature between 126 and 155°C, fracture rates in two sides greater than 95.5%, strength (Marshall Resistance) less than 1417.5 kg-force and Asphalt Void less than 5.45 had good compaction rate (more than 97%). Also, three parameters of thickness, distribution temperature, and void were introduced as influence variables affecting compaction in the software.*

Keywords: Asphalt pavement, Density, Data Mining, Decision Tree, Artificial Neural Network.