

## ASSESSING THE TEST SECTION PAVEMENT STRUCTURE USING VECTOR QUANTIZATION NEURAL NETWORK

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### *ABSTRACT*

Among various architectures of commonly used Artificial Neural Networks (ANNs), backpropagation neural network (BPNN) algorithm is the most referred to the civil engineering. However, choosing the proper type of neural network for a certain problem some experience might be expected from the user. In order to familiarize with others types of ANNs, the paper investigates the method of accurate estimation of pavement structure and layer material properties by the use of Vector Quantization Neural Network (VQNN). The authors intended use of VQNN is to employ the classification-based problem for assessing the test section asphalt pavement structure under consideration, that there is no thickness data and layer material properties available. Full set of the results from FWD deflection measurements are used as an VQNN input data. Making a move towards adopting soft computing methods, interpretations of the FWD data has been introduced according to a general modeling principle which says "try simple things first". The presented approach is to interpolate within a database of theoretical deflection basins using VQNN network classifier with standard competitive training algorithm.

*KEY WORDS:* Vector Quantization, Deflection basins, Classification.