

PREDIKSI PRESTASI MATEMATIKA SISWA BERDASARKAN DATA PISA MENGGUNAKAN MODEL NEURAL NETWORK

by Dhoriva Urwatul Wutsqa, Muhammad Fauzan

ABSTRACT

Indonesian students' mathematics achievements based on evaluations from PISA (Programme for International Student Assessment) show unsatisfactory results. Factors that affect student' mathematics achievement can be both cognitive and non-cognitive factors. Thus, predicting student' mathematics achievement can be done using both cognitive and non-cognitive factors. These factors involve categorical and numerical variables, so in this study, RBFNN model with ensemble clustering is proposed. The RBFNN model is an effective neural network model for prediction purposes, and the ensemble clustering process in the RBFNN model is carried out to accommodate categorical and numerical variables. This study uses data from the 2018 PISA, with 10,628 Indonesian student data that provide complete responses on the required variables. Input variables are cognitive (metacognition) and non-cognitive factors (Economic, Social, and Cultural Status (ESCS), resilience, life satisfaction, feelings of pleasure, pride, fear, and sadness), and gender. Meanwhile, the output variable is the Indonesian student' mathematics achievement, which is calculated from the average of the PV1MATH-PV10MATH variables. The result shows that the performance of the RBFNN model with ensemble clustering is very satisfactory in predicting student' mathematics achievement based on PISA data.

Kata Kunci: *prediction, student math achievement, RBFNN, ensemble clustering.*