Abstract

Diabetes Mellitus (DM) is a metabolic disorder caused by abnormalities in insulin secretion and function. Detection of DM can be performed by conducting Hemoglobin A1c (HbA1c) tests that measure blood sugar levels over the past 2-3 months. If the test results show a value of 6.5% or higher, the patient is considered to have diabetes. However, there are factors that can influence the detection of type-1 DM using the HbA1c test. Therefore, an alternative for detecting diabetes is to use machine learning and gene expression data. In this study, the author will build a predictive model for diabetes in children using Support Vector Machine - Grey Wolf Optimizer. The goal of this research is to identify diabetes in children based on gene expression using a microarray-based approach. Based on the results obtained, the best model with a Linear kernel produced accuracy and F1-Score values of 0.78% and 0.84%.

Keyword: Diabetes Mellitus, Microarray, Gene Expression, SVM, GWO