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IDENTIFICATION OF DIABETES MELLITUS (DM) USING ARTIFICIAL NEURAL NETWORK (ANN) WITH BACKPROPAGATION METHOD AND SIGMOID ACTIVATION FUNCTION

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Objectives: Diabetes is one of the most common illnesses and serious chronic diseases in Indonesia today. Diabetes Mellitus (DM) which is commonly known as diabetes is a disease characterized by hyperglycemia (an increase in blood sugar levels) that is persistent and varied, especially after eating. This disease is not easy to be accurately recognized by the public. So we need to develop a system that can identify accurately.

Methods: The system was built using artificial neural networks with backpropagation methods and sigmoid activation functions. For the methods, the backpropagation Neural Network Architecture used is as follows: (1) 8 input layers, because there are 8 categories used as input data for ANN, namely: (a) The number of times pregnant; (b) 2-hour plasma glucose concentration in an oral glucose test; (c) Diastolic blood pressure (mm Hg); (d) Triceps fold thickness (mm); (e) 2-hour serum insulin ($\mu\text{U} / \text{ml}$); (f) Body Mass Index (weight in kg / (height in m²)); (g) Diabetes genealogical functions; (h) Age (years), (2) 2 output layers, i.e. output = 1, it means that the person has diabetes, and if output = 0 then that person does not have Diabetes and (3) 5 Hidden layer with diabetes data obtained from uci machine learning repository there are 768 data, with details of 500 affected by diabetes and 268 not affected by diabetes.

Results: The results showed that this method successfully classified diabetics and non-diabetics disease with close to the 100% accuracy in training 8 times for ANN in diabetes.

Conclusions: The conclusion obtained is that it can be said that it is good to do identification based on the accuracy level that is produced close to 100%.