

Diabetes in Indonesia has been perceived as a grave health problem and has been a concern since the early 1980's [2]. The prevalence of diabetes in adults in Indonesia, as stated by IDF, was 6.2% with the total case amounting to 10.681.400. Moreover, Indonesia is also in the top ten global countries with the highest diabetes case in 2013. This research will investigate the role of Deep Belief Network (DBN) and NeuroEvolution of Augmenting Topology (NEAT) in solving regression problems in detecting diabetes. DBN works by processing the data in unsupervised network architectures. The algorithm puts Restricted Boltzmann Machines (RBM) into a stacked process. The output of the first RBM will be the input for the next RBM. On the other hand, the NEAT algorithm works by investigating the neural network architecture and evaluating the architecture using a multi-layer perceptron algorithm. Collaboration with a Genetic Algorithm in NEAT is the key process in architecture development. The research results showed that DBN could be utilized as the initial weight for Backpropagation Neural Network at 22.61% on average. On the other hand, the NEAT algorithm could be used by collaborating with a multi-layer perceptron to solve this regression problem by providing 74.5% confidence. This work also reveals potential works in the future by combining the Backpropagation algorithm with NEAT as an evaluation function and by combining it with DBN algorithms to process the produced initial weight.