

Knowledge of Extraction from Trained Neural Network by Using Decision Tree

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Abstract—Inside the sets of data, hidden knowledge can be acquired by using neural network. These knowledge are described within topology, using activation function and connection weight at hidden neurons and output neurons. Is hardly to be understanding since neural networks act as a black box. The black box problem can be solved by extracting knowledge (rule) from trained neural network. Thus, the aim of this paper is to extract valuable information from trained neural networks using decision. Further, the Levenberg Marquardt algorithm was applied to training 30 networks for each datasets, using learning parameters and basis weights differences. As the number of hidden neurons increase, mean squared error and mean absolute percentage error decrease, and more time they need to deal with the dataset, that is result of investigation from neural network architectures. Decision tree induction generally performs better in knowledge extraction result with accuracy and precision level from 84.07 to 93.17 percent. The extracted rule can be used to explaining the process of the neural network systems and also can be applied in other systems like expert systems.

Keywords— *knowledge extraction; neural network; decision tree*