

# **A DEEP NEURAL NETWORK – BASED APPROACH FOR RECOGNIZING STATISTICAL PROBABILITY DISTRIBUTIONS**

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## **Abstract**

The probability distribution is extremely important in data analysis. Selection of the right distribution requires critical thinking that based on adequate mastery of the characteristics of the distribution. Classically, the probability distribution is identified by several methods, such as: Chi-square goodness of fit test, graph, normal plot and non-parametric goodness of fit test. To identify probability distributions, this article proposes Deep Neural Network (DNN) approaches. Particularly, this article discusses three DNN approaches including DNN using backpropagation with two hidden layers, Artificial Neural Network (ANN) using backpropagation with one hidden layer and Fuzzy Learning Vector Quantization (FLVQ). The implementation through a simulation to identify the probability distributions results show that the DNN approach outperforms the ANN and FLVQ approaches.

Key Word: Artificial Neural Network, Deep Neural Network, Fuzzy Learning Vector Quantification, and Probability Distribution.