Abstract

In this paper, it is shown that Multilayer perceptron Neural Network can elegantly perform nonlinear regression of transfer characteristic of electronic devices. After rigorous computer simulations authors develop the optimal MLP NN models, which elegantly perform such a nonlinear regression. Results show that the proposed optimal MLP NN models have optimal values of MSE (mean square error), r (correlation coefficient) when it is validated on the and transistor non-linearity is observed in the transfer characteristics. The datasets are obtained by performing experiments on a typical p-n junction diode 1N4007, transistor BC107 and Field Effect transistor (FET) BFW10. The number of readings is treated as samples. Optimal MLP NN (Multilayer Perceptron Neural Network) is developed for regression of electronic devices characteristics. Other NN configuration Jordan Elman Neural Network has also been considered for this regression. visual inspection of the plots that the outputs of the estimated MLP NN models closely follow the real one. It is seen that the performance of the proposed MLP NN models clearly outperforms the best Jordan Elman NN models. The simple NN models such as the MLP NN can be employed to solve such a nonlinear regression problem, is
a major contribution of this research work.

References

- Ham M. Fredric, Ivica Kostanic, Principles of neurocomputing for science & engineering (Tata McGraw Hill)
- Haykin S., Neural Networks: A Comprehensive Foundation, Pearson Education.

Index Terms

Computer Science
Emerging Trends in Technology

Keywords
Regression Mlp Nn Jordan Elman Neural Network