Abstract

Convolutional Codes are used in a variety of areas from computers to communications. Ideally one simply looks at a received message, which may contain errors, and decodes it into the error-free message. Unfortunately, this decoding process can be quite complicated and might not exploit the maximum error correction capabilities of the code. For these reasons neural networks have been widely used as decoders. A neural network approach for decoding of convolutional codes is studied. Here sample neural network uses simple perceptron model with one hidden layer. The training of the neural network is done using Back-propagation. A sequentially programmed Viterbi decoding algorithm is used to generate training patterns for training the neural network decoder. The performance of the trained neural network is compared with Viterbi decoding solution. The comparisons indicate that the neural network approach perform with comparable error-correcting accuracy as the Viterbi decoding algorithm.
References

- Huang, S.-C. and Huang, Y.-F. 1991. Bounds on the number of hidden neurons in multilayer perceptrons. IEEE Transactions on Neural Networks. 2, 47-54.

Index Terms

Computer Science          Emerging Trends in Technology

Keywords

Convolutional Codes  Back Propogation  Viterbi Decoding