Abstract

This paper is intended to provide an alternative optimization approach for the design of one-dimensional finite impulse response filter based on modified Widrow-Hoff neural network. This technique is based on minimization of weighted square-error function in frequency domain. Design guidelines and implementation approach was presented along with the proof of convergence theorem for the stability of neural network algorithm. Few examples which include single and multiband digital finite impulse response filters are presented; comparisons to existing methods are made. Computational complexity of various neural-based methods are also compared. As simulation results illustrates, the proposed neural network based method is capable of achieving an excellent performance for digital filter design.

References

Design of 1-Dimentional FIR Filter using Modified Widrow-Hoff Neural Network


Index Terms

Computer Science

Artificial Intelligence
Keywords
FIR filter  Weighted square-error function  Modified Widrow-Hoff neural network
Convergence theorem