Abstract

This paper mainly concentrates on different mixture structures which include affine and convex combinations of several parallel running adaptive filters. The mixture structures are investigated using their final MSE values and the tracking of the nonlinear system is done using an ANN model that updates the filter weights using nonlinear learning strategies (it uses stochastic gradient descent to update the filter weights based on MSEs of mixture structures). The mixture structures greatly improve the convergence and performance of the constituent filters compared to traditional adaptive methods. The mixture structures employed in this paper can be applied to the constituent filters that employ different adaptation algorithms. We describe an adaptive neural network model that updates the weights of the filter using nonlinear methods.

References

- Suleyman Serdar Kozat, Member, IEEE, Alper Tunga Erdogan, Member, IEEE, Andrew C. Singer, Fellow, IEEE, and Ali H. Sayed, Fellow, IEEE, "steady state MSE performance analysis of mixture approaches to adaptive filtering", IEEE TRANSACTIONS ON
SIGNAL PROCESSING VOL., 58, AUGUST 2010


- Neil J. Bershad, Fellow, IEEE, José Carlos M. Bermudez, Senior Member, IEEE, and Jean-Yves Tourneret, Member, IEEE, "Affine Combination of Two LMS Adaptive Filters—Transient Mean-Square Analysis," IEEE TRANSACTIONS ON SIGNAL PROCESSING, VOL. 56, NO. 5, MAY 2008


Index Terms

Computer Science  
Artificial Intelligence

Keywords

Mixtures structures affine convex adaptive filter artificial neural network
adaptive neural network

tracking.