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Function Approximation with Radial Basis Function Neural Networks via FIR Filter

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Abstract : Recent experimental evidences have shown that because of a fast convergence and a nice accuracy, neural networks training via extended Kalman filter (EKF) method is widely applied. However, as to an uncertainty of the system dynamics or modeling error, the performance of the method is unreliable. In order to overcome this problem in this paper, a new finite impulse response (FIR) filter based learning algorithm is proposed to train radial basis function neural networks (RBFN) for nonlinear function approximation. Compared to the EKF training method, the proposed FIR filter training method is more robust to those environmental conditions. Furthermore, the number of centers will be considered since it affects the performance of approximation.

Keywords : extended Kalman filter, classification problem, radial basis function networks (RBFN), finite impulse response (FIR) filter
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