The Research of Applying Competitive Hopfield Neural Networks to Adaptive Maneuvering Tracking

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ABSTRACT

The way to hold the target ’ s kinematic quantities is an important subject in the multiple target radar tracking system. The key developments of this subject are data association techniques and maneuvering target detection algorithm. Multiple targets Tacking algorithm plays an important role in radar systems. It will obtain the relations between radar measurements and existing tracks after applying a data association algorithm. A new approach to data association based on the Competitive Hopfield Neural Network (CHNN) is investigated. Moreover, we also design a multiple-target tracking system in order to solve both the data association and the target tracking problems. With this approach, the matching between radar measurements and existing target tracks can achieve a consideration. This paper will also provide a data association technique, ” 1-step conditional maximum likelihood ” , and an adaptive tracking algorithm to solve the maneuvering target tracking problems. We convince that the proposed approach will enhance the radar tracking performance and obtain better tracking results.

Keywords : Data association, Competitive Hopfield Neural Network, 1-step conditional maximum likelihood

Table of Contents

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