A Research on Compression of Radar Target Trajectory

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ABSTRACT

In this paper, a parallel method using a Competitive Hopfield Neural Network (CHNN) is proposed for compressing radar track. Based on the CHNN, the compressing radar track is regarded as a minimization of a criterion function which is defined as the arc-to-chord deviation between the curve and the polygon. The CHNN differs from the original Hopfield network in that a competitive winner-take-all mechanism is imposed. The winner-take-all mechanism adeptly precludes the necessity of determining the values for the weighting factors in the energy function in maintaining a feasible result. In order to prove the tracking performance, a computer simulation algorithm is proposed in this paper. Because of its computation capability of this algorithm, the radar measurement related to existed target tracks can be chosen optimally. Computer simulation results indicate that this approach successfully and optimally solves the compressing radar track.

Keywords : Competitive Hopfield neural network、 Kalman filter

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