

Extended multiple-model estimator for radar maneuvering target tracking

Chung, Yi-Nung; Juang, D.-J. ; Hsu, T.-C. ;
Chang, C.-H. ; Yang, M.-R. ; Hsu, S.-P.

Abstract

An extended multiple-model estimator for tracking multiple maneuvering targets has been developed in this paper. In this approach, an equivalent filter bank structure is designed to solve the uncertainty problems caused by target maneuvering situations. Moreover, this system is implemented as a tracking filter which consists of a data association technique and a multiple-model algorithm as an adaptive maneuvering compensator. The advantage of this system is that it can adjust the estimation depending on various targets' situations. Via this approach, both data association and target maneuvering problems can be solved simultaneously. Moreover, in order to verify that such a tracking system is really improved, detailed simulations of multi-target tracking using several tracking algorithms are conducted and compared with this proposed tracking system. According to the simulation results, we convince that this approach can track multiple maneuvering targets underlying various situations.

Key words: Adaptive maneuvering compensator; Data association;
Extended multiple-model estimator