

A DYNAMIC MULTIPLE-MODEL ESTIMATOR AND NEURAL ALGORITHM FOR RADAR SYSTEM

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ABSTRACT. *Target maneuvering situations are usually existed in radar tracking systems. The maneuvering will cause severe tracking error in a radar tracking system. Therefore accurately detecting and estimating maneuvering status of targets is one essential step in the reduction of tracking errors. In this paper, we develop a dynamic multiple-model estimator to track multiple maneuvering targets for a radar system. In this dynamic multiple-model estimator, an equivalent filter bank structure is designed to estimate the status of target maneuvering situations. Moreover, an adaptive procedure is applied in this system to adjust the filtering gain in real time to obtain faster response for tracking filters. Therefore, applying the proposed approach, the system will quickly and efficiently to obtain the more accurate tracking results even under various targets' situations.*

Keywords: Target maneuvering situations, Dynamic multiple-model estimator, Adaptive procedure

1. **Introduction.** In real applications of a radar tracking system, the moving targets usually include both maneuvering and non-maneuvering situations. If the targets are with maneuvering, the acceleration of targets usually causes the tracking in the radar system deviated from the trajectory. Consequently, how to detect and estimate the maneuvering status effectively is very important in radar tracking system. In this paper, we develop a dynamic multiple-model estimator which is composed of an equivalent bank of Kalman filters for estimating maneuvering. The filter is to estimate the magnitude of acceleration,