ABSTRACT
An improved algorithm for tracking multiple maneuvering targets using a new approach has been developed in this thesis. This algorithm is implemented with an adaptive filter consisting of a data association technique denoted 1-step conditional maximum likelihood together with a bank of Kalman filters as an adaptive maneuvering compensator. Via this approach, both data association and target maneuvering problems can be solved simultaneously. Moreover, in order to verify such a tracking system is really improved. Detailed simulations of the multi-target tracking using several tracking algorithms for many situations are developed. Computer simulation results indicate that this approach successfully tracks multiple targets and have better performance also.

Keywords: Maneuvering; Data Association; Measurement; Innovation; Covariance; Prediction; Adaptive Procedure