

A Sequential Monte Carlo Approach for Extended Object Tracking in the Presence of Clutter

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Abstract: Extended objects are characterised with multiple measurements originated from different locations of the object surface. This paper presents a novel Sequential Monte Carlo (SMC) approach for extended object tracking in the presence of clutter. The problem is formulated for general nonlinear problems. The main contribution of this work is in the derivation of the likelihood function for nonlinear measurement functions, with sets of measurements belonging to a bounded region. Simulation results are presented when the object is surrounded by a circular region. Accurate estimation results are presented both for the object kinematic state and object extent.