

Group Object Tracking with Sequential Monte Carlo Methods Based on a Parameterised Likelihood Function

Nikolay Petrov, Lyudmila Mihaylova, Amadou Gning, Donka Angelova

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Group objects are characterised with multiple measurements originated from different locations of the object surface. This paper presents a novel general Sequential Monte Carlo (SMC) approach for group object tracking applicable to various 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 spatial region. Simulation results are presented when the group of objects is surrounded by a circular region. Accurate estimation results are presented both for the group object kinematic state and extent.