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Improved IMM Algorithm for Nonlinear Maneuvering Target ...

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Maneuvering Target Tracking Algorithm Based on Interacting ...

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Federated IMM-UKF Algorithm for Multi-Sensor Data Fusion (PDF) A Nonlinear Filtering Algorithm For Multi-Models

Nonlinear tracking algorithms. Non-linear tracking algorithms use a Non-linear filter to cope with the situation where the measurements have a non-linear relationship to the final track coordinates, where the errors are non-Gaussian, or where the motion update model is non-linear. The most common non-linear filters are: the Extended Kalman filter

Nonlinear Filtering With Imm Algorithm

The nonlinear filters have been incorporated into the IMM framework, resulting in the IMMEKF, IMMUKF algorithms. The IMM algorithm has been employed for dynamically adjusting the process noise. The use of an IMM method allows the exploitation of the benefits of highly dynamic models in the problem of vehicle navigation.

An IMM Algorithm for Tracking Maneuvering Vehicles in an ...

using nonlinear filtering approaches with an interacting multiple model (IMM) algorithm. An ultra-tight GPS/INS architecture involves the integration of in-phase and quadrature components from the correlator of a GPS receiver with INS data. An unscented Kalman filter

In particular, UKF-MIMM is obviously better than EKF-IMM and UKF-IMM in accuracy while EKF-SIMM is superior in elapsed time. Therefore, the proposed algorithms can be competitive alternatives to the classical IMM-based filter algorithms for nonlinear maneuvering target tracking.

In this paper, four improved IMM algorithms (EKF-SIMM, EKF-MIMM, UKF-SIMM and UKF-MIMM) are presented for nonlinear maneuvering target tracking based on SIMM and MIMM. The proposed improved algorithms can receive the optimal state estimations of target in the nonlinear minimum variance sense.

The algorithm of IMM-nonlinear filters is introduced to deal with the noise uncertainty and system nonlinearity simultaneously. Let a general system for multiple models in discrete time be described by: $x_k + 1 = f(x_k, k, M_k) + w(x_k, M_k)$ (2a)

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Radar tracker - Wikipedia

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CIF is a multisensor nonlinear filtering algorithm; it evaluates the information vector and information matrix rather than state vector and covariance, which can reduce the error of nonlinear filtering algorithm. IMM disposes all the models simultaneously through Markov Chain, which can enhance the quick response of the filter.

Abstract. In order to solve the tracking problem of radar maneuvering target in nonlinear system model and non-Gaussian noise background, this paper puts forward one interacting multiple model (IMM) iterated extended particle filter algorithm (IMM-IEHPF). The algorithm makes use of multiple modes to model the target motion form to track any maneuvering target and each mode uses iterated ...

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Kalman filter - Wikipedia

IMM-UKF Algorithm and IMM-EKF Algorithm for Tracking ...

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The IMM estimation algorithm is one of the cost-effective adaptive estimation algorithm for systems involving parametric changes. The combination of IMM with UKF could deal with the problem of nonlinear filtering with uncertain noise. Simulation results show that the method can improve the accuracy of INS/GPS/odometer integrated navigation.

In simulation studies, we illustrate the design of the TPM and compare the proposed method with another two IMM-based algorithms where the extended Kalman filter (EKF) and the unscented filter (UF) are used for each model, respectively. We conclude that the IMM-LMMSE filter is preferred for

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