

## Tracking Filtering Algorithm Based on ConvLSTM

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**Abstract :** The nonlinear maneuvering target tracking problem is mainly a state estimation problem when the target motion model is uncertain. Traditional solutions include Kalman filtering based on Bayesian filtering framework and extended Kalman filtering. However, these methods need prior knowledge such as kinematics model and state system distribution, and their performance is poor in state estimation of nonprior complex dynamic systems. Therefore, in view of the problems existing in traditional algorithms, a convolution LSTM target state estimation (SAConvLSTM-SE) algorithm based on Self-Attention memory (SAM) is proposed to learn the historical motion state of the target and the error distribution information measured at the current time. The measured track point data of airborne radar are processed into data sets. After supervised training, the data-driven deep neural network based on SAConvLSTM can directly obtain the target state at the next moment. Through experiments on two different maneuvering targets, we find that the network has stronger robustness and better tracking accuracy than the existing tracking methods.

**Keywords :** maneuvering target, state estimation, Kalman filter, LSTM, self-attention

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