

博士论坛

多传感器信息融合Wiener滤波器和平滑器

毛琳^{1, 2}, 邓自立²

1.哈尔滨工程大学 自动化学院, 哈尔滨 150001

2.黑龙江大学 电子工程学院, 哈尔滨 150080

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摘要 应用现代时间序列分析方法, 基于ARMA新息模型和增广状态空间模型, 应用标量加权最优融合准则, 对于带白色和有色观测噪声的ARMA信号, 提出了多传感器分布式最优信息融合Wiener滤波器和平滑器, 其中给出了计算局部平滑误差方差和互协方差的计算公式, 它们可被用于计算最优加权系数。同单传感器情形相比, 可提高平滑器的精度。一个三传感器目标跟踪系统的仿真例子说明其有效性。

关键词 [多传感器信息融合](#) [增广状态空间模型](#) [线性最小方差信息融合准则](#) [信号Wiener滤波器和平滑器](#)

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Multisensor information fusion Wiener filter and smoother

MAO Lin^{1, 2}, DENG Zi-li²

1.Department of Automation, Harbin Engineering University, Harbin 150001, China

2.Department of Electronic Engineering, Heilongjiang University, Harbin 150080, China

Abstract

Using the modern time series analysis method, based on the ARMA innovation model and augmented state space model, applying the optimal fusion rule weighted by scales, the multisensor distributed optimal information fusion Wiener filter and smoother are proposed for the ARMA signals with white and colored measurement noises. The formulas of computing local smoothing error variances and cross-covariances are given, which are applied to compute optimal weighting coefficients. Compared with the single sensor case, the accuracy of the fused smoother is improved. A simulation example of a target tracking system with three sensors shows its effectiveness.

Key words [multisensor information fusion](#) [augmented state space model](#) [linear minimum variance information fusion criterion](#) [signal Wiener filter and smoother](#)

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通讯作者 毛琳 maolinj@yahoo.com.cn

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