

短文

基于Mean Shift算法和NMI特征的目标跟踪算法研究

甘明刚, 陈杰, 王亚楠, 金代中

1. 北京理工大学自动化学院 北京 100081

2. 北京理工大学复杂系统智能控制与决策教育部重点实验室 北京 100081

收稿日期 2009-11-11 修回日期 2010-3-30 网络版发布日期 接受日期

摘要

针对传统Mean shift跟踪算法对空中运动目标跟踪效果不理想的问题, 提出了基于Mean shift算法和归一化转动惯量(Normalized moment of inertia, NMI)特征的目标跟踪算法. 算法中引入了目标NMI特征, 建立了基于虚警概率最小原则和相似度二级判决门限的跟踪策略, 对目标模型进行更新. 同时利用卡尔曼滤波, 在目标被遮挡后进行估计预测. 实验表明该算法在空中运动目标存在较大形变、被遮挡等情况下, 能够进行实时、稳定跟踪.

关键词 [目标跟踪](#) [均值漂移](#) [NMI特征](#) [卡尔曼滤波](#)

分类号

A Target Tracking Algorithm Based on Mean Shift and Normalized Moment of Inertia Feature

GAN Ming-Gang, CHEN Jie, WANG Ya-Nan, JIN Dai-Zhong

1. School of Automation, Beijing Institute of Technology, Beijing 100081

2. Key Laboratory of Complex Systems Intelligent Control and Decision, Ministry of Education, Beijing Institute of Technology, Beijing 100081

Abstract

The paper presents a target tracking algorithm which is based on the mean shift algorithm and the normalized moment of inertia (NMI) feature, because the result of the moving target tracking in the air is not satisfactory by the traditional mean shift tracking algorithm. The NMI feature of the target is introduced, and the studied tracking strategy based on the minimum principle of the false alarm probability and the two-stage decision threshold of the similarity is constructed in the algorithm. The Kalman filter is used for the estimation and prediction when the target is occluded. The experimental results show that with the algorithm even the moving target in the air is in large deformation and occlusion, the system can effectively guarantee that the tracking is real-time and stable.

Key words [Target tracking](#) [mean shift](#) [normalized moment of inertia \(NMI\) feature](#) [Kalman filter](#)

DOI: 10.3724/SP.J.1004.2010.01332

通讯作者 甘明刚 agan@bit.edu.cn

作者个人主页 甘明刚; 陈杰; 王亚楠; 金代中

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(1777KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献\[PDF\]](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

相关信息

▶ [本刊中 包含“目标跟踪”的 相关文章](#)

▶ 本文作者相关文章

· [甘明刚](#)

· [陈杰](#)

· [王亚楠](#)

· [金代中](#)