

基于多特征 Mean-Shift 的灵巧弹药末制导跟踪算法

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摘要: 针对灵巧弹药在复杂背景下跟踪目标的问题, 将跟踪目标颜色信息和边缘信息进行融合, 提出了一种基于多特征的 Mean-Shift 跟踪算法, 从而解决了复杂背景下跟踪目标的鲁棒性问题. 应用色差空间表示跟踪目标的颜色信息, 同时引入边缘信息表示跟踪目标的纹理信息, 从而可以有效解决复杂背景下 Mean Shift 跟踪鲁棒性问题. 应用色差空间代替色调空间, 并用反映射方法求解加权值, 从而节省了运算复杂度, 满足实时性要求. 实验结果表明, 改进算法跟踪性能较经典 Mean Shift 法具有明显提高, 满足工程应用需求.

关键词: 灵巧弹药; Mean Shift 算法; 目标跟踪; 鲁棒性

A Target Tracking Algorithm of Smart Munition Based on Multiple Features

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Abstract: For the accurate target tracking of smart munitions' under complex background, a improved Mean Shift tracking algorithm based on color features and edge feature is proposed to improve the robustness of the Mean Shift algorithm. Due to a color-difference space is introduced to represent color features and edge information is introduced to represent texture feature, the robustness of Mean Shift algorithm is significantly enhanced. Using color-difference space instead of hue space and using back-projection method to resolve weighted coefficients, the complexity of algorithm is reduced and the real-time demand is meet. Experimental results show that compared with the state-art Mean Shift algorithm, the proposed multiple feature Mean Shift algorithm has improved the tracking performance and suited to engineering implementation. autonomous landing.

Key words: smart munition; Mean Shift algorithm; target tracking; robustness

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