

一种改进 A-KAZE 算法的特征点匹配方法

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摘要: 提出了一种改进的 A-KAZE 算法, 利用非线性扩散滤波策略改善了传统高斯核函数构建尺度空间的不足, 在实现局部自适应滤除细节的同时保留了目标的边界, 且检测到的特征点具有尺度不变性; 结合特征点主方向和改进的 BRIEF 描述子解决了匹配中旋转不变性的问题, 以二进制编码形式缩短了匹配时间, 并分别在室内和室外环境下进行特征点匹配实验, 与 ORB、BRISK 等算法进行了比较, 结果证明改进的算法结合了 A-KAZE 与 BRIEF 算法的优势, 实现了高准确率和高效的图像特征点匹配。

关键词: 特征点匹配; A-KAZE 算法; 非线性尺度空间; BRIEF 描述子

Feature points matching method based on improved

A-KAZE algorithm

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Abstract: An improved A-KAZE algorithm is proposed in this paper. The nonlinear diffusion filtering strategy is used to improve the defect of the traditional Gauss kernel function in constructing the scale space, and the boundary of the target is preserved while the local adaptive filtering is realized. The characteristic points detected have scale invariance. Combining the principal direction of feature points and the improved BRIEF descriptor, the problem of rotation invariance in matching is solved, and the matching time is shortened in the form of binary coding. Compared with ORB, BRISK algorithm, the improved algorithm realizes the advantage combination of A-KAZE and BRIEF algorithm, and carries on the characteristic point matching experiment in indoor and outdoor environment, and compares it with that of BRIEF algorithm, and the result shows that the improved algorithm realizes the advantage combination of A-KAZE and brief algorithm. The high accuracy and high efficiency image feature point matching is realized.

Key words: featurepoints matching; A-KAZE algorithm; nonlinear scale space; BRIEF descriptor

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