

## **Comparison of clustering methods for tracking features in RGB-D images**

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**Abstract:** The use of low-cost, camera sensors for Simultaneous Localization And Mapping and Moving Object Tracking (SLAMMOT) is a developing research area. Image features can be static or dynamic, sparse or dense, and can appear or disappear, making them difficult to track individually over an image sequence. Clustering techniques have been recommended and used to cluster image features to improve tracking results. New and affordable RGB-D cameras, provide both color and depth information. This paper compares five different clustering algorithms to determine which algorithm would be best suited to cluster features from RGB-D image sequences for tracking objects in an indoor dynamic environment. Speeded Up Robust Features (SURF) are used and the performance of k-means, mean shift, a contrario, Density-Based Spatial Clustering of Applications with Noise (DBSCAN), and Gaussian Mixture Models (GMM) clustering algorithms are validated in tests with synthetic and RGB-D data. Results indicate that mean shift clustering may be suitable for the SLAMMOT task as it appeared best for overall performance as well as for execution efficiency.