

Research on SIFT technique in feature extraction, building an image search application

Hoang Ha Hai Nam

Abstract: This study investigates the application of the Scale-Invariant Feature Transform (SIFT) technique for feature extraction and matching to develop a robust content-based image retrieval system. The SIFT algorithm is employed to detect and describe local features in images that are invariant to image scaling, rotation, and partial illumination changes, making it highly suitable for accurate image matching. The research focuses on the integration of these extracted features into a searchable database, enabling efficient similarity comparison between a query image and stored images. An application is constructed to demonstrate the practical implementation of this approach, allowing users to retrieve visually similar images from a dataset. Experimental results indicate that the system achieves high retrieval accuracy and robustness against common image transformations, validating the effectiveness of SIFT for real-world image search tasks. The findings contribute to the field of computer vision by providing a reliable framework for image retrieval based on local feature descriptors.

Keywords: SIFT, image retrieval, feature extraction, content-based image retrieval