The bag-of-features model is one of the most popular and promising approaches for extracting the underlying semantics from image databases. However, the associated image categorization based on machine learning techniques may not convince us of its validity since we cannot visually verify how images have been classified in the high-dimensional image feature space. This thesis aims at visually rearranging the images in the projected feature space by taking advantage of a set of representative features called visual words obtained using the bag-of-features model. The main idea is to associate each image with a specific number of visual words to compose a bipartite graph, and then lay out the overall images using anchored map representation in which the ordering of anchor nodes is optimized through a genetic algorithm. For handling relatively large image datasets, A pair of similar images is merged one by one to conduct the hierarchical clustering through the similarity measure based on the weighted Jaccard coefficient. Voronoi partitioning has been also incorporated into the present approach so that we can visually identify the image categorization based on support vector machine. Experimental results are finally presented to demonstrate that the present visualization framework can effectively elucidate the underlying relationships between images and visual words through the anchored map representation.

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