The goal of this study is to generate “metadata” of the images in digital archives and to use them for similar image retrieval system. Generally, bag-of-features [4], which is a histogram representation method for object recognition in images, uses feature points and local features calculated based on the grayscale distribution of pixels by using SIFT [3]. On the other hand, the deep learning approach [6] has attracted attention in the field of general object recognition as end-to-end learning, not local features oriented learning. The typical deep learning recognizes the whole structured object in the image; however, it misses significant sub-parts in the image. To overcome the issue, we divide an image into segments, extract features from each segment using deep learning, then apply bag-of-features using the clustering for the local features, and finally represents it as histogram expression reflects the metadata in the image. Furthermore, by using distance calculation representing the similarity of the cluster as comparing the histograms, the discriminant precision of a similar image could be improved, when the number of clusters is too small. The experiment result shows the effectiveness of generating metadata using BoF with deep learning, the distance evaluation method reflecting the relationship between clusters.

Key words: deep learning, general object recognition, bug of feature, similar image retrieval