Last decade brought wide spread of the digital photography among both amateurs and professionals, what resulted in huge photo collections. Image tagging is one way to bring an order to the photos, however doing this by hand is time consuming and most users simply do not tag most of their photos. This work aims on automated image tagging using the bag-of-words model. Attempts were made both with point-based (SURF) and area-based (MSER) visual features including also the colour information. CLARA clustering algorithm is then used to create a discrete mapping of the features to 'visual words'. Proposed object recognition algorithm can run in real time and is designed to recognize several objects on an image. The algorithm is currently not fit for practical use, as it would need higher success rate, but the results are promising.