Multi object class detection with a generative model

We describe an approach capable of simultaneous recognition and localization of multiple object classes using a generative model. A novel hierarchical representation allows to represent individual images as well as various objects classes in a single similarity invariant model. The recognition method is based on a codebook representation where appearance clusters built from edge based features are shared among several object classes. A probabilistic model allows for reliable detection of various objects in the same image. The approach is highly efficient due to fast clustering and matching methods capable of dealing with millions of high dimensional features. The system shows excellent performance on several object categories over a wide range of scales, in-plane rotations, background clutter, and partial occlusions. The performance of the proposed multi-object class detection approach is comparable with state of the art approaches dedicated to a single object class recognition problem.

Bernt Schiele
U Darmstadt