

Accurate classification of objects of interest for video surveillance is difficult due to occlusions, deformations and variable views/illumination. The adopted feature sets tend to overcome these issues by including many and complementary features; however, their large dimensionality poses an intrinsic challenge to the classification task. In this paper, we present a novel technique providing maximum-likelihood dimensionality reduction in Gaussian mixture models for classification. The technique, called hereafter mixture of maximum-likelihood normalized projections (mixture of ML-NP), was used in this work to classify a 44-dimensional data set into 4 classes (bag, trolley, single person, group of people). The accuracy achieved on an independent test set is 98% vs. 80% of the runner-up (MultiBoost/AdaBoost).