Ensemble Projection for Semi-supervised Image Classification
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Task
► Improve classification performance by using unlabeled data

Summary
► A semi-supervised method by learning new image representations rather than regularizing classifying functions
► The method outperforms previous semi-supervised methods, is complementary with them, and is more generally applicable
► The framework is simple, easy-to-use, and can be used for image retrieval and image clustering as well
► The code and data are available at www.vision.ee.ethz.ch/~daid/EnPro/

Results
► Features: The concatenation of GIST, PHOG, and LBP
► Classifiers: Logistic Regression (LR), SVMs, Laplacian SVMs (LSVM) [1], and Harmonic Functions (HF) [2]
► Datasets: Good results on four datasets Scene-15 [3], LandUse-21 [4], Texture-25, and Caltech-101

Semi-supervised

Self-taught

Fig.1 Ensemble Projection consists of unsupervised feature learning (1)-(3) and supervised classification (4).
(1) Sample T diverse prototype sets from all known data: prototypes are inter-distinctive and intra-similar.
(2) Train classifiers on the sets to obtain T projection functions.
(3) Project images by the functions to build their representations.
(4) Classify images using the projected representations.

References