Representative Selection with Structured Sparsity

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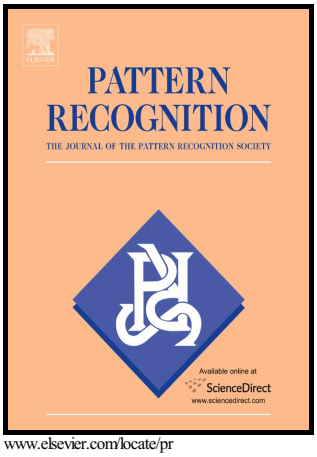

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Representative Selection with Structured Sparsity

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Abstract

We propose a novel formulation to find representatives in data samples via learning with structured sparsity. To find representatives with both diversity and representativeness, we formulate the problem as a structurally-regularized learning where the objective function consists of a reconstruction error and three structured regularizers: (1) group sparsity regularizer, (2) diversity regularizer, and (3) locality-sensitivity regularizer. For the optimization of the objective, we propose an accelerated proximal gradient algorithm, combined with the proximal-Dykstra method and the calculation of parametric maximum flows. Experiments on image and video data validate the effectiveness of our method in finding exemplars with diversity and representativeness and demonstrate its robustness to outliers.

Keywords: representative selection, structured sparsity, diversity