

# On the Algorithmics and Applications of a Mixed-norm based Kernel Learning Formulation

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- Mixed norm for group structured set of kernels

$$\min_{\mathbf{w}_{jk}, b, \xi_i} \quad \frac{1}{2} \left[ \max_j \left( \sum_{k=1}^{n_j} \|\mathbf{w}_{jk}\|_2 \right)^2 \right] + C \sum_i \xi_i$$

$$\text{s.t.} \quad y_i \left( \sum_{j=1}^n \sum_{k=1}^{n_j} \mathbf{w}_{jk}^\top \phi_{jk}(\mathbf{x}_i) - b \right) \geq 1 - \xi_i, \quad \xi_i \geq 0 \quad \forall i$$

- Mirror-Descent to solve the formulation
- Scales better than SimpleMKL

- Better generalization in Object Categorization tasks

