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PolieDRO: a distributionally robust optimization framework for energy analytics

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PolieDRO is a novel analytics framework for classification and regres-
sion that harnesses the power and flexibility of Data-Driven Distributionally Robust Optimization (DRO) to
circumvent the need for regularization hyperparameters. Recent literature shows that traditional machine
learning methods such as SVM and (square-root) LASSO can be written as Warserstein-based DRO problems.
Inspired by those results we propose a hyperparameter-free ambiguity set that explores the polyhedral struc-
ture of data-driven convex hulls, generating computationally tractable regression and classification methods
for any convex loss function.
We apply this novel framework to time series analysis tasks in the energy sector, with promising results.

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