

Session 59 - Risk Bounds For Distributional Regression

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This work examines risk bounds for nonparametric distributional regression estimators. For convex-constrained distributional regression, general upper bounds are established for the continuous ranked probability score (CRPS) and the worst-case mean squared error (MSE) across the domain. These theoretical results are applied to isotonic and trend filtering distributional regression, yielding convergence rates consistent with those for mean estimation. Furthermore, a general upper bound is derived for distributional regression under non-convex constraints, with a specific application to neural network-based estimators. Comprehensive experiments on both simulated and real data validate the theoretical contributions, demonstrating their practical effectiveness.

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