

Conformal prediction with localization

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Abstract: In this paper, we propose the method of localized conformal prediction where we can perform the conformal inference using only a local region around a new test sample when constructing its confidence interval. The constructed confidence intervals have finite coverage guarantee for all underlying distributions. This is the first work that generalizes the method of conformal prediction to the case where we can break the data exchangeability and give the test sample a special role.

We provide theoretical results about its coverage guarantee and characterization of its over-coverage, and we have applied it to different simulations and compared it with the method of conformal prediction.