

Interval estimation: An Info-metrics Approach

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Abstract

We develop here an information theoretic method of inference of problems where all of the observed information is in terms of intervals. We focus here on the unconditional case where the observed interval information is in terms the minimal and maximal value at each period, say lowest and highest daily temperature. Given interval data, we infer the marginal and joint distributions of the interval variable and its range. Our inferential procedure is based on entropy maximization subject to multidimensional moment conditions and normalization where the entropy is defined over discretized intervals. The discretization is based on theory or empirically observed quantities. The number of estimated parameters is independent of the discretization so the level of discretization does not change the fundamental level of complexity of our model. As an example, we apply our method to study the weather pattern in for Los Angeles and New York City across the last century.

Key Words: Discretization, Entropy, Information, Moment conditions, Weather