Finite Sample Inference in Incomplete Models

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Abstract :
We propose confidence regions for the parameters of incomplete models with exact coverage of the true parameter in finite samples. Our confidence region inverts a test, which generalizes Monte Carlo tests to incomplete models. The test statistic is a discrete analogue of a new optimal transport characterization of the sharp identified region. Both test statistic and critical values rely on simulation drawn from the distribution of latent variables and are computed using solutions to discrete optimal transport, hence linear programming problems. We also propose a fast preliminary search in the parameter space with an alternative, more conservative yet consistent test, based on a parameter free critical value.

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