

Unifying Frequentist and Bayesian Tests

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For statistical hypothesis testing, there is no point in discussing superiority between the frequentist and the Bayesian approaches. This is so because, for each Bayesian hypothesis testing method, one can always construct a frequentist test leading to the same conclusion for each point of the sample space, and the reciprocal is true. This theorem is proved using the concept of composite p-value, which is a composition of the p-value calculated in terms of the Bayesian measure of evidence. In such setting, arbitrary prior distributions and likelihood shapes can be used, so this is a generalized unifying approach. This way, pre-experimental performance measures, such as type I and type II error probabilities, and post-experimental interpretations, such as the posterior probability of the null hypothesis being true, are simultaneously taken in account for a unified hybrid frequentist-Bayesian approach.

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Referencias

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