

BOOK REVIEW

Constrained Bayesian Methods of Hypotheses Testing: A New Philosophy of Hypotheses Testing in Parallel and Sequential Experiments

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Hypothesis testing is one of the basic branches of mathematical statistics which is very important for other problems of statistics and has a great application to many theoretical and practical problems. The first statement of the problem and its solution, applying t-test, was realized by Student at the beginning of the previous century. Then by the geniuses of statistical science, Fisher (1925), Neyman and Pearson (1933), Jeffreys (1939) and Wald (1947), introduced their own philosophies for testing statistical hypotheses: p-value, frequentist, Bayes and sequential, respectively. These methods use different principles for testing hypotheses by applying different type of information, and that sometimes give different results. Each of these methods has both advantages and disadvantages in comparison with the other methods. Since 50th of the last century people started to attempt to combine positive aspects of these methods in one common method of hypotheses testing but, unfortunately, without success.

The current monograph has been considering a Constrained Bayesian Method (CBM) and this method is devoted to and solves the above given problem successfully, as it could be seen from the contents of the book. Theoretical basement of the method, investigation of its properties, applications to rather different type of statistical hypotheses and to different types of practical problems have been presented in the book. One can clearly see from the book that the proposed method is more general than other existing methods, which are particular cases of CBM that combines all positive properties of other methods and is free from their flaws.

I want to mention that CBM completely belongs to the author starting from the formulation of the problem of testing statistical hypotheses in the form of a constrained Bayesian statement until development of everything, described in the book, parallel and sequential methods of testing statistical hypotheses of different type. Moreover I wish to underline that the author developed not only the new methods but he also thoroughly theoretically and practically investigated their properties (by simulation and applying to the real data (see chapter 7)) and by applying them for solving many practical problems of absolutely different nature (see Appendices). One can observe from the author's publications (see Bibliography) that all results that have been presented in the book are original and belong to the author.

I think that the methods developed in the book are very interesting, useful for scientists working both in theory and practice and they have a great perspective to be used both in theory and practice.

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