Parsad, Rajender; **Rathore, Abhishek**; **Gupta, V. K.**
Computer aided construction of efficient designs for making treatment-treatment and treatment-control comparisons. (English) Zbl 1188.62224
Am. J. Math. Manage. Sci. 29, No. 1-2, Spec. Iss., 201-228 (2009).

Summary: This paper describes an algorithm for computer-aided search of weighted A-optimal/ weighted A-efficient block designs for making test vs test and tests vs control comparisons, the weights depending upon the importance of the comparisons. The computer aided search of designs is implemented by modifying the interchange and exchange algorithms of *B. Jones* and *J. A. Eccleston* [J. R. Stat. Soc., Ser. B. 42, 238–243 (1980; Zbl 0443.62064)]. The algorithm also computes the lower bounds to the weighted A-efficiency in addition to finding an optimal/nearly optimal block design. The algorithm has been translated into a computer program using Microsoft Visual C++. Using this programme, a search for weighted A-efficient designs for making test vs test and tests vs control comparisons has been made for $v \leq 20$, $b \leq 50$, $k \leq 20$ and $n \leq 300$ such that the average replication number of treatments is not more than 20 and $\nu > k$. A total of 15,259 designs with lower bound to A-efficiency ≥ 0.9500 were obtained. The comparison of the designs generated was made with already existing efficient designs in the literature. This comparison revealed that in almost all the cases the designs searched through the algorithm were either equally efficient or better than the existing designs with the same parameters.

MSC:

62K05	Optimal statistical designs
62K10	Statistical block designs
62-04	Software, source code, etc. for problems pertaining to statistics
65C60	Computational problems in statistics (MSC2010)
62Q05	Statistical tables

Cited in **1** Document

Keywords:

computer aided search; algorithm; BTIB Designs; standard reinforced BIB designs; test treatment; control treatment

Software:

Visual C++

Full Text: DOI

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