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Stopping Rules for Selecting the Optimal Subset

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Abstract: Selecting the best of a finite set of alternatives is a very important area of research. In this paper, we discuss the stopping rules of the procedure of selecting the optimum subset out of a very large alternative dynamic system. A combined procedure with two stages is studied. The first stage employs the ordinal optimization to select a subset that overlaps with the set of actual best $k\%$ designs with high probability. After that, the optimal computing budget allocation is used in the second stage to select the best m designs from the selected subset. The efficiency of selection procedures with two different stopping rules is studied by implementing them on two test problems to see the efficiency of the procedure in the context of the most effective stopping rule. The first problem is a generic example and the second one is a buffer allocation problem.

Keywords: *large scale problems; simulation optimization; ordinal optimization; stopping rules; optimal computing budget allocation.*

1 Introduction

Statistical selection procedures are designed to answer the question "*which treatment can be considered the best?*", where the *best* refers to the design that has the maximum or minimum expected performance measure. Different sampling assumptions, approximations, parameters and stopping rules were combined to define a procedure. Due to the increasing demands that are being placed upon simulation optimization algorithms together with having many differences between the statistical selection procedures, it is getting important to find out which of these procedures is the most convenient one to

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