Ranking and Selection

Ranking and selection (R&S) often refers to the problem of selecting the best among a group of alternatives, where the best is often (but not always) defined based on the mean performances. The problem has its root in statistics, but it becomes very important in the field of stochastic simulation, as simulation models are often used to compare different scenarios and select the best. The problem is also closely related to the best arm identification problem in machine learning. Here is a recent review written by us on the topic.

My co-authors and I have studied a number of different R&S problems. In particular, we were pioneers in studying parallel R&S, indifference-zone-free R&S, robust R&S and R&S with covariates. Here is the list of publications and preprints that we have in this area. We are currently working on developing software packages and hope to have them online soon.

Recently, my group’s research interest in R&S focuses on developing R&S algorithms that are capable of solving large-scale R&S problems. We look at both the theoretical side and computational side of the problem, and try to integrate them together to develop efficient algorithms. The following are some examples:

Figure, title, abstract (knockout tournament)

Figure, title, abstract (fixed budget KT)