Estimating the Target Region of Computer Experiments Using Sequential Uniform Design

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In this study, we develop sequential methodology for estimating the target region of computer experiments. The target region here corresponds to the input domain in which the desired outcome(s) of the computer experiment can be produced. The proposed methodology utilizes the idea of uniform design (UD), for which an adaptive weight function is used to sequentially allocate computer trials. The proposed methodology reveals to be quite useful in the following sense: (i) it is suitable for any type of design area; (ii) it can deal with the target region incorporated with multiple responses; (iii) it can easily handle the problem with high dimensional input spaces. We illustrate the methodology on some real examples and discuss some computational issues related to practical implementation.