A ROBUST DESIGN TUTORIAL

Abstract

This tutorial describes a framework for discrete event simulation which synthesizes Taguchi's robust design philosophy and a response surface metamodeling approach. We show how the use of a loss function that incorporates both system mean and system variability can be used to efficiently and effectively carry out system optimization and improvement efforts. The results can yield new insights into system behavior. A robust selection approach for qualitatively different systems is also described. In both cases, robust design may lead to recommended system configurations that differ substantially from those selected by analysis solely on the basis of mean response. Issues of model validation and model complexity can also be addressed. We assume a knowledge base at the level of Chapter 12 of *Simulation Modeling and Analysis* (Law and Kelton, 1991) but will review essential elements and distribute illustrative examples at the session.

Full citation: