Variational problems arising from balancing several error criteria. (English. English, Italian summary)


The purpose of this paper is to describe various results which pertain to a class of variational problems in which two or more error criteria are to be controlled simultaneously in some optimal fashion. The authors suppose that two functionals $G_1(x)$ and $G_2(x)$ are given which both measure the “desirability” of $x$. The simplest example for this problem is that of smoothing splines. Other problems of this kind come from nonlinear parameter estimation, optimal control and optimal design. The authors point out some general properties of these problems and give a survey of some interesting examples which arise in applications. Furthermore, an analysis of certain classes of these problems is given.

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