Bergounioux, Maïtine; **Ito, Kazufumi**; **Kunisch, Karl**
Primal-dual strategy for constrained optimal control problems. (English) Zbl 0937.49017
SIAM J. Control Optimization 37, No. 4, 1176-1194 (1999).

This paper introduces an active set strategy for the solution of linear-quadratic elliptic optimal control problems with simple control constraints. The algorithm is motivated by a set of optimality conditions derived using convex analysis. In the algorithm, arbitrary many constraints can be added to or removed from the active set from one iteration to the next. The iterates are allowed to be infeasible with respect to the control constraints. Convergence analyses for the infinite dimensional problem as well as for the discretized problem are presented. Numerical examples are given.

Reviewer: Matthias Heinkenschloß (Houston)

MSC:

49M29 Numerical methods involving duality
49N10 Linear-quadratic optimal control problems
49K20 Optimality conditions for problems involving partial differential equations

Keywords:

active set method; augmented Lagrangian; primal-dual method; linear-quadratic elliptic optimal control problems

Full Text: DOI