Cutting plane algorithms for nonlinear binary optimization

Journal Article

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Current state-of-the-art methods for solving discrete optimization problems are usually restricted to convex settings. In this paper, we propose a general approach based on cutting planes for solving nonlinear, possibly nonconvex, binary optimization problems. We provide a rigorous convergence analysis that quantifies the number of iterations required under different conditions. This is different to most other work in discrete optimization where only finite convergence is proved. Moreover, using tools from variational analysis, we provide necessary and sufficient dual optimality conditions.

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