Cutting Plane Method in Decision Analysis

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Computational decision analysis methods, such as the DELTA method, have been developed and implemented over a number of years for solving decision problems where vague and numerically imprecise information prevails. However, the evaluation phases in those methods often give rise to bilinear programming problems, which are time-consuming to solve in an interactive environment with general nonlinear programming solvers. This paper proposes a linear programming based algorithm that combines a cutting plane method with the lower bounding technique for solving this type of problem. The central theme is to identify the global optimum as early as possible in order to avoid generating unnecessary cuts in the convergent cutting plane procedure.