A NOTE ON LOCAL SENSITIVITY ANALYSIS FOR PARAMETRIC OPTIMIZATION PROBLEM

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Abstract: This paper is concerned with the local sensitivity analysis for parametric optimization problem. By using an NCP function, the KKT system of parametric optimization problem can be reformulated as a system of semismooth equations. Based on the equations, local analytic formulas for the sensitivities of the objective function and primal and dual variables with respect to all parameters are obtained. This method can deal with the local sensitivities of all the optimal solutions which satisfy the linear independent constraint qualification. As a by-product of our analysis, we obtain a sufficient condition for the existence of the sensitivity solution to the problem we discussed. This new method is an improvement of the existed methods. Numerical examples are given to illustrate the method in the end.

Key words: parametric optimization problem, sensitivity analysis, NCP function, semismooth equation

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