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17. Control Theory and Optimization

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Sufficient Global Optimality Conditions for Nonconvex Nonsmooth Problems.

The primary purpose of this paper is to find sufficient global optimality conditions for nonsmooth convex maximization, reverse convex and d. c. minimization problems.

We have the Rockafellar's optimality condition $\partial f(z) \subset N(D,z)$ and the Classical optimality condition $\partial f(z) \cap N(D,z) \neq \emptyset$, at any maximum z of objective convex function $f(\cdot)$ on D. These are not sufficient for z being a maximum of f on D. To characterize a global maximum only the Rockafellar's conditions was globalized by J. -B. Hirriart-Urruty $\partial_\epsilon f(z) \subset N_\epsilon(D,z)$, $\forall \epsilon > 0$ and by A. S. Strekalovsky $\partial f(y) \subset N(D,y)\ \forall y : f(y) = f(z)$.

We will develop the classical optimality condition. $\partial f(y) \cap N(D,y) \neq \emptyset$, $\forall y : f(y) = f(z)$.

Next we consider reverse convex and d. c. minimization problems and obtain sufficient conditions also connected with the classical optimality conditions.