

Optimal control of non Lipschitz differential inclusions

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Abstract

A Hamilton-Jacobi theory is developed for the minimal time problem of system with possibly discontinuous dynamics. Given a target set S and other sided Perron dynamics F , we show that the minimal time function $TS(\cdot)$ is characterized as the unique proximal semi-solution to a limiting version of the Hamilton-Jacobi equation.

Moreover, optimal control system described by differential inclusion with continuous and one sided Perron right-hand side in a finite dimensional space is also studied in this paper. We prove that the value function is the unique solution of a proximal Hamilton–Jacobi inequalities.

We present some extensions to discontinuous systems of these relatively old results.