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Title: Nonsmooth Sard results in optimization

Abstract: The vast majority of numerical methods involve finding the zeros -
or critical points - of some operator. Understanding the structure of these
critical points is the key to understanding the behavior of algorithms in
practice. The Morse-Sard theorem says that the set of critical values of a
smooth function from a Euclidean space (or a manifold) to another has Lebesgue
measure 0. Modern applications require an extension of this theory to
nonsmooth functions. We review notions of critical values of nonsmooth
functions and present the following result: the set of Clarke critical values
of a finite (or infinite countable) selection over a family of
C^k-continuously differentiable functions has measure zero. The result
applies in particular to
max-type functions and yields a straightforward application to semi-infinite
programming.

This is a joint work with Luc Barbet and Marc Dambrine (Université de Pau et
des Pays de l'Adour).