

Global Directional Derivatives for Nonconvex Optimization Problems

Felipe Lara Obreque

Departamento de Matemáticas, Facultad de Ciencias, Universidad de Tarapacá
Arica, Chile. e-mail: felipelaraobreque@gmail.com.

August 6, 2019

Abstract

In this talk, we introduce the notions of upper and lower global directional derivatives. We provide calculus rules and monotonicity properties for these notions. As a consequence, new formulas for the Dini directional derivatives, radial epiderivatives and generalized asymptotic functions are given in terms of the upper and lower global directional derivatives. Furthermore, a mean value theorem, which extend the well-known Diewert's mean value theorem for radially upper and lower semicontinuous functions, is established. Finally, we provide necessary and sufficient optimality conditions for a point to be a local and/or global solution for the nonconvex minimization problem and for nonconvex and nonsmooth mathematical programming problems.

References

- [1] F. LARA, Optimality conditions for nonconvex optimization via global derivatives. *Submitted*.