

LIPSCHITZEAN PIECEWISE SMOOTH MINIMIZATION (LIPSMIN)

Andreas Griewank

Humboldt University, Germany
griewank@math.hu-berlin.de

We present a new method for the minimization of continuous piecewise smooth objectives. It is based on successive piecewise linearization in abs-normal form combined with quadratic overestimation. The inner problems are solved in by a bundle method in finitely many steps, and the outer iterates converge with a linear rate that depends on the curvature of the selection functions. We present numerical results on the usual test problems. Related successive piecewise linearization strategies are being developed for equation solving and the numerical integration of dynamical systems with Lipschitzian right hand sides. This is a fundamental shift of paradigm from the customary local approximation of problem functions by linear or quadratic Taylor expansions.

Joint work with Andrea Walther (University of Paderborn, Germany), Sabrina Fiege (University of Paderborn, Germany) and Torsten Bosse (Argonne National Laboratory, USA).