Line-Search for Piecewise Smooth Functions

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Industrial optimization problems often involve piecewise smooth objectives that are composed from individual smooth model functions defined on patches that subdivide the design space. The non-smoothness may not necessarily be a fundamental feature of the underlying physical model and only due to its numerical representation in a low dimensional space, but it can cause standard line search methods to stall. In this talk we present a line search method adapted to such problems that makes explicit use of the piecewise smooth nature of the model function. The new method compares favorably with existing approaches, both in theory and practice.

Joint work with Jonathan Grant-Peters (University of Oxford, UK).