Frank E. Curtis

An Interior-Point Method with Inexact Step Calculations for Large-Scale Nonlinear Optimization

200 W Packer Ave Rm 325
Bethlehem
PA 18015
frank.e.curtis@lehigh.edu
Olaf Schenk
Andreas Waechter

We present an interior-point algorithm for nonlinear constrained optimization. The novel feature of the algorithm is that it allows the inexact solution of the primal-dual system during every iteration, meaning that iterative linear solvers present a viable and competitive option in large-scale settings. Loose and practical termination conditions for the iterative linear system solve are presented and shown to provide global convergence guarantees under minimal assumptions. We illustrate the practical performance of our approach on large optimization test set collections and model PDE-constrained problems.