

Optimization solver benchmarking

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Among numerous optimization solvers, it is challenging to pick one that will solve some optimization problem most quickly or excel according to some other criteria. When designing a new solver, it's useful to compare it with existing solvers, categorized by the type of optimization problems they handle, to identify any weaknesses in the algorithm.

In this talk, we will introduce a Python package, jointly built with researchers at Hamburg University, that allows us to compare many different solvers. Users can select either individual optimization problems or an entire class of problems based on the objective function and conditions, and obtain various graphical representations for solver comparison. We have chosen 1528 optimization problems from the well established CUTEst optimization problem set for this purpose.

Additionally, we will present the GENO project, which includes a language for defining optimization problems and demonstrate how we've used this package to enhance the line search algorithm in the GENO solver.