



NUOPT for S-PLUS®

NUOPT for S-PLUS is a powerful extension of the S-PLUS statistical and data analysis software. With NUOPT for S-PLUS, you can tackle the most challenging nonlinear optimization problems involving tens of thousands of variables and constraints.

NUOPT for S-PLUS is a cutting-edge software package capable of solving very large optimization problems. Designed for analysts and researchers, NUOPT for S-PLUS is used for a wide range of applications including portfolio optimization, nonlinear and robust statistical modeling, and circuit optimization. The full power of the S-PLUS language is integrated with NUOPT. No other package can match this combination of powerful statistics and graphics with large-scale optimization problem solving.

The Premier Package for Numerical Optimization

NUOPT, developed by Mathematical Systems, Inc., is a premier optimization package with the ability to efficiently solve nonlinear optimization problems with tens of thousands of variables and constraints. NUOPT can solve a wide range of problems, from linear programming to mixed

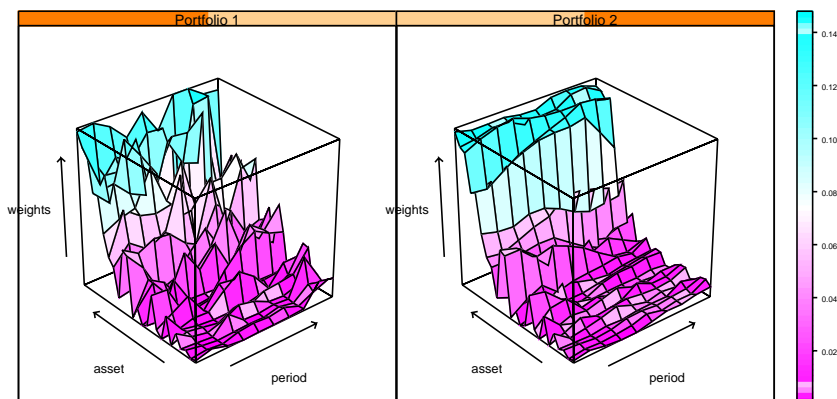
integer programming to constrained nonlinear optimization. NUOPT is designed and implemented to be efficiently applied to large-scale problems, with no software limitation on the problem size to be solved. Offering state-of-the-art primal dual interior point methods as well as the simplex method, it ensures efficient solutions for both small and large problems.

Unsurpassed Flexibility and Robustness

Using NUOPT's SIMPLE modeling language in S-PLUS you can specify complex nonlinear models. Because NUOPT is embedded in S-PLUS, your optimization modeling seamlessly integrates with graphical analysis and statistical modeling. Most importantly, you can trust your results — NUOPT has been tested on hundreds of standard problems, and can solve virtually all of these problems without any parameter tuning.

Types of Problems Handled

- Linear programming
- Transportation
- Quadratic programming
- Unconstrained nonlinear optimization
- Constrained nonlinear optimization



NUOPT for S-PLUS allows you to explore different portfolio optimization methods and build in features that reflect real-world constraints. The above figure displays optimized portfolio weights computed using two different methods. The weights on the left are rebalanced during each time period independently of the weights during the previous time period. The weights on the right are constrained to smoothly evolve from one time period to the next, resulting in a more stable portfolio allocation.

