![Artelys logo] **Artelys** | OPTIMIZATION SOLUTIONS

KNĪTRO® 11.1

Fast. Powerful. Reliable.

The most advanced solver for nonlinear optimization

❚ Efficient & robust solution on large scale problems

❚ Four interior-point/active-set algorithms for NLP

❚ Three MINLP algorithms for discrete optimization

❚ Complementarity constraints for equilibrium problems

❚ Parallel multi-start method for global optimization

❚ Many extra features based on customer feedbacks

❚ Easy to use and well documented

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Think one step ahead...
and let Artelys Knitro be your competitive advantage!

The optimization techniques used by Artelys Knitro offer the leading combination of computational efficiency and robustness. Artelys Knitro is the only nonlinear solver with four different algorithms, allowing it to solve a large range of complex nonlinear problems.

Key features

- Efficient and robust solution on large scale problems
- Two interior-point/barrier and two active-set/SQP algorithms
- Three algorithms for mixed-integer nonlinear optimization
- Heuristics, cutting planes, branching rules for MINLP
- Special routine to handle complementary constraints
- Parallel multistart feature for global optimization
- Ability to run multiple algorithms concurrently
- Automatic and parallel tuning of option settings
- Automatic computation of approximate first-order and second-order derivatives
- Smart initialization strategies and fast infeasibility detection

New Artelys Knitro 11.1 features

- New interior-point warm start option
- Faster convergence on DFO problems using enhanced termination criteria
- New Python API with dedicated methods to define structured expressions
- Automatic convexity detection for QP/QCQPs
- Improved Knapsack cut generation including lifted cuts for MINLP problems
- Enhancement of the L-BFGS Hessian approximation
- General performance improvement on convex problems in particular for very large instances

Problem classes solved by Artelys Knitro

- General nonlinear problems (NLP), including non-convex
- Systems of nonlinear equations
- Linear problems (LP)
- Quadratic problems (QP/QCQP), both convex and non-convex
- Second-order cone programs (SOCP) including nonlinear constraints and objective
- Least squares problems / regression, both linear and nonlinear
- Mathematical programs with complementarity constraints (MPCC/MPEC)
- Mixed-integer nonlinear problems (MIP/MINLP)
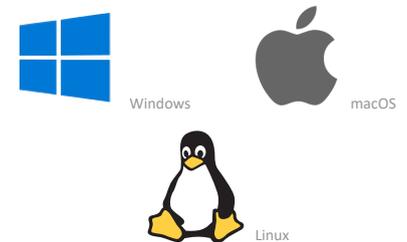- Derivative-free optimization problems (DFO)

MODELING SYSTEMS
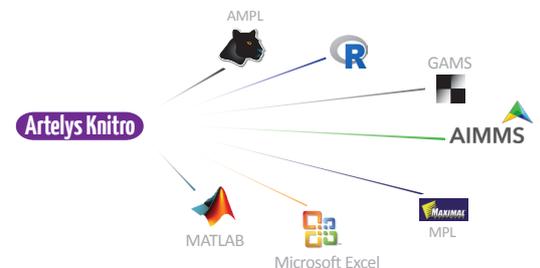
PROGRAMMING INTERFACES
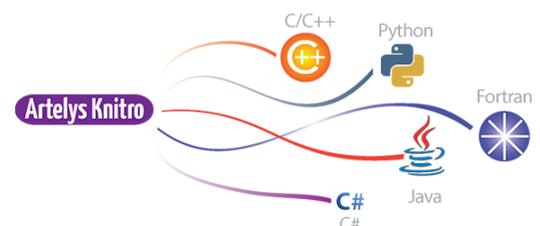
OPERATING SYSTEMS

Online Artelys Knitro documentation
www.artelys.com/tools/knitro_doc

Try Artelys Knitro for free
www.artelys.com/knitro

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