

KNITRO[®] 10.3

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

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

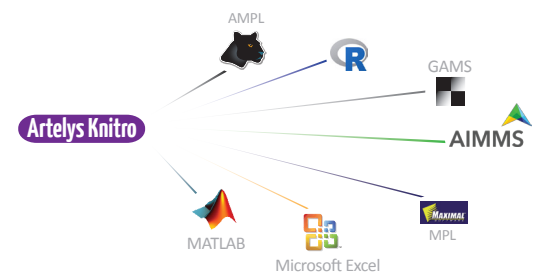
New Artelys Knitro 10.3 features

- **The Python API now supports Python 3**
- New “cg_precond” option for the preconditioning of the conjugate gradient subproblems in the Knitro interior-point algorithms
- **Several improvements to the internal linear algebra** for better robustness and efficiency
- Significant improvements in large-scale least-squares models
- Improvements in the “feasibility restoration phase” allowing faster detection of infeasible models
- Several **enhancements of the R interface**
- Overall efficiency and robustness improvements on general nonlinear models, including models with integer variables

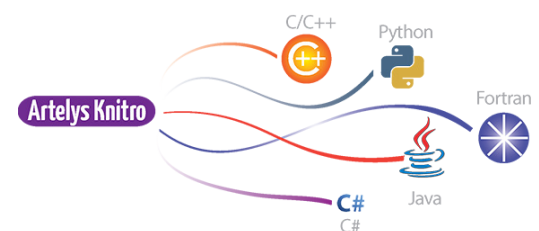
Problem classes solved by Artelys Knitro

- General nonlinear problems (NLP), including non-convex
- Systems of nonlinear equations
- Linear problems (LP)
- Quadratic problems (QP/QCQP), both convex and non-convex
- 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)

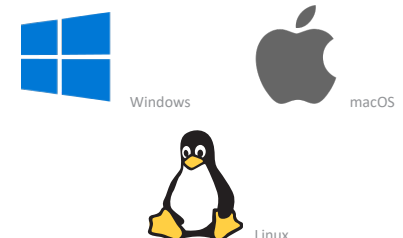
MODELING SYSTEMS



PROGRAMMING INTERFACES



OPERATING SYSTEMS



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

Try Artelys Knitro for free
www.artelys.com/en/optimization-tools/knitro

Artelys Knitro was created by Ziena Optimization and is now developed by Artelys, which also distributes and supports the software worldwide.

Artelys USA

150 N. Michigan, Suite 800
Chicago, IL 60601 - USA
+1 (312) 588-3376

Artelys France

81 rue Saint-Lazare
75009 Paris - France
+33 (0)1 44 77 89 00

Artelys Canada

3 Place Ville-Marie, Suite 400
H3B 2E3 Montréal (QC) - Canada
+1 438 239 7736

Artelys UK

Aldgate Tower, 6th floor, 2 Leman Street
London E1 8FA - UK
+1 (514) 228-7595