Optimization Solvers

Solvers

- **Free and open-source software**

  SciPy- a general numeric package for Python, with some support for optimization.

- **Commercial software**

  CPLEX – integer, linear and quadratic programming.
  AMPL – modelling language for large-scale linear, mixed integer and nonlinear optimization
  Gurobi – integer, linear and quadratic programming.
  Maple – linear, quadratic, and nonlinear, continuous and integer optimization. Constrained and unconstrained. Global optimization with add-on toolbox.
  MATLAB – linear, integer, quadratic, and nonlinear problems with Optimization Toolbox; multiple maxima, multiple minima, and non-smooth optimization problems; estimation and optimization of model parameters.

- **free for academic use**

  AIMMS, AMPL, CPLEX, GEKKO Python, Gurobi

https://en.wikipedia.org/wiki/List_of_optimization_software

Example: Online-optimizer

$$Min \quad 3x_1 + 2x_2$$

subject to

$$x_1 + x_2 \leq 9$$
$$3x_1 + x_2 \leq 18$$
$$x_1 \leq 7$$
$$x_2 \leq 6$$
$$x_1, x_2 \geq 0$$

https://online-optimizer.appspot.com/?model=builtin:default.mod

Where to find the CPLEX examples

https://www.ibm.com/support/knowledgecenter/SSSA5P_12.8.0/ilog.odms.ide.help/OPL_Studio/usroplexamples/topics/opl_mp_examples_where.html

https://www.ibm.com/support/knowledgecenter/SSSA5P_12.8.0/ilog.odms.studio.help/Optimization_Studio/topics/COS_home.html

CPLEX

https://www.ibm.com/support/knowledgecenter/SSSA5P_12.8.0/ilog.odms.studio.help/Optimization_Studio/topics/COS_home.html

CVX-MATLAB

http://cvxr.com/cvx/