

**COMP SCI and SFWR ENG 4-6TE3  
CES 722 and CES 723  
Project for Graduate Students**

Christopher Anand

August 14, 2008

---

***Project: Comparison of nonlinear optimization software packages***

1. Download the student version of the AMPL modelling language package from the WEB page <http://www.ampl.com/> if you do not have access to the full version.
2. Use the NEOS server <http://www-neos.mcs.anl.gov/neos/> to make your computational experiments.
3. Use the following nonlinearly constrained optimization packages:
  - IPOPT [AMPL Input]
  - KNITRO [AMPL Input]
  - LANCELOT [AMPL Input]
  - MINOS [AMPL Input]
  - PENNON [AMPL Input]via the NEOS server for your computational experiments.
4. Visit the WEB page: <http://www.princeton.edu/~rvdb/ampl/nlmodels/>
  - Choose 5 models relevant to your own research directions;
  - Write the AMPL code of one nonlinear problem from your own research project;
  - Solve all the six models by using all the five solvers, via the NEOS server.
5. Write a critical, informative report about your computational experiences. Describe the problems, the main characteristics of the solvers and pay attention to evaluate the performance of the solvers on your test-set. Compare the solvers based on the computational results and properties of the problems you were solving.

**Deadline to deliver your report:** One day before the final exam.