Seyedalireza Yektamaram

Ph.D. Lehigh University

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Profile Overview

- Industrial Engineering Ph.D. at **Lehigh** University
- Concentration on Optimization methods for Parallel and Distributed Machine Learning with applications in **Deep Learning**
- **Parallel** Computing using C, C++ (MPI, OpenMP, Pthreads)
- **GPU** Computing (CUDA, Thrust, Cudnn)
- Linux Sysadmin of HPC Grids (**Bash** scripting, Resource management)

Education

- 2012-present **Lehigh University**
  Ph.D. Industrial and Systems Engineering (Overall GPA=3.97 /4)
  Dissertation: *"Optimization Algorithms for Machine Learning Designed for Parallel and Distributed Environments"*
  Advisor: Prof. Katya Scheinberg
- 2009-2012 **Sharif University of Technology**
  M.Sc. in Industrial Engineering (Overall GPA=18.06 / 20)
  M.Sc. Thesis: *"Sports Scheduling: Premier League Structure"*
  Advisor: Prof. Nasser Salmasi
- 2005-2009 **Azad University Tehran-North Branch**
  B.Sc. in Industrial Engineering (Overall GPA=17.42 / 20)
  B.Sc. Thesis: "*Implementing Cost & Time Management based on PMBOK for library construction project*"
  Advisor: Prof. Hassan Shahmohammad

Research & Project Participations

- Jun 2015- Present **Operations Research fellow at SAS Institute**
  - Parallel second order optimization in Deep Learning based on curvature (Hessian, Gauss-Newton) information
  - GPU computation applications in Machine Learning for *K-Nearest Neighbor*, *SVM* and *Deep Learning optimization (SGD, LBFGS)*
  - Fast Algorithms for Support Vector Machines (Cascade SVM, Merging support vectors)
- Sep 2013-May 2015 **Distributed Parallel and Accelerated Coordinate Descent** for **Sparse** Inverse Covariance Selection (Prof. Katya Scheinberg)
  *(Implemented in **C++** using **MPI** parallel settings) (Scalable to Large Machine Learning Problems)*
- Dec 2014 **Python: Binary Semidefinite** Optimizer using Linearized Cuts
  - *Integer Programming Course Project (Prof. Ted Ralphs)*
  - *Application in Sports Scheduling*
- Sep 2012-2013 Precipitation Prediction using Conditional Random Fields
  - *Data Processing of Time Series, Fast Cholesky Decomposition*
- Dec 2012 Change Detection in Sparse Gaussian Graphical Models
  - *Optimization in Machine Learning* Course Project

Conference and Presentations

"Strategies for Maintaining Sparse Dual Solutions in Large-scale Nonlinear Support Vector Machines", *INFORMS 2016*, Nashville, Tennessee

"A Nonconvex Hessian-free Method for Deep Learning Problems", *SLDS 2016*, Conference on Statistical Learning and Data Science, Chapel Hill, North Carolina

"Distributed Parallel Coordinate Descent Methods for Sparse Inverse Covariance Problem", *INFORMS 2015*, Philadelphia, Pennsylvania

"Parallel SINCO-2D", *ISMP 2015*, 22nd International Symposium on Mathematical Programming, Pittsburgh, Pennsylvania

"Accelerated Coordinate Descent Method for Sparse Inverse Covariance Selection." *NYAS 2015*, 9th Annual Machine Learning Symposium, New York

"Parallel Greedy Coordinate Descent Method for Sparse Inverse Covariance Selection." *MOPTA 2014*, Conference, Lehigh University, Pennsylvania

Publications

Zhou, Akrotirianakis, Yektamaram, and Griffin "A matrix-free line-search algorithm for nonconvex optimization", Optimization Methods and Software, (2017) Accepted.

Azad, Saharidis, Davoudpour, Malekly, and Yektamaram. "Strategies for protecting supply chain networks against facility and transportation disruptions: an improved Benders decomposition approach." Annals of Operations Research 210, no. 1 (2013): 125-163.

Experience

- June 2015-present — Operations research fellow at SAS Institute, Part-time Intern
- Aug 2013-present — Volunteering at Lehigh CORAL Lab (Lehigh ISE Computational Optimization Lab) System Administrator, Optimization Software maintenance, Server maintenance
- Sep 2011-Apr 2012 — ATISAZ Corporation (Real-Estate Company in Iran)

Teaching Assistantship Experience

- "***Optimization Models and Applications***", Prof. Katya Scheinberg (Fall 2013)
- "***Stochastic Processes***", Prof. George Wilson (Spring 2013)
- "***Sequencing and Scheduling***", Prof. Nasser Salmasi (Spring 2012)
- "***Advanced Linear Programming***", Prof. Nasser Salmasi (Fall 2011)

Research Interests

- Deep Learning Optimization
- Computational Operations Research – Parallel Computing
- GPU Computing
- Optimization in Machine Learning – Scalable Algorithms
- Graph Theory and Discrete Optimization

Languages

- **English:** Fluent
- **Persian:** Native

Selected Courses

- Optimization Methods in Machine Learning (Graphical Models, Lasso)
- Computational Methods in Optimization (Parallel Computing, Data Structures)
- Nonlinear Optimization
- Conic Optimization (Second order Cone Programming, Semidefinite Programming)
- Convex Analysis
- Integer Programming
- Design and Analysis of Algorithms
- Graph Theory

Computer Skills

- **Programming:** C, C++, PYTHON, BLAS, MATLAB, Excel (VBA)
- **Deep Learning:** SAS, Tensorflow, Caffe, Theano
- **Linux:** Bash Scripting, CRON
- **GPU Programming:** CUDA, Thrust
- **Parallel Systems:** MPI, OpenMP, Pthreads, Cilk, Hadoop
- **Operations Research:** Lingo, GAMS, CPLEX (C++ Integrated), SAS
- **Workflow:** Git, SVN, JIRA
- **Data-mining**: Weka, R
- **Web and DB:** HTML, CMS, MySQL
- **Industrial Engineering:** GPSS, Minitab, Arena, Primavera, Decision Tools