

# Xi He

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## OBJECTIVE

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To pursue a research internship position in data analysis.

## EDUCATION

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**Ph.D.** Industrial and System Engineering, Lehigh University, PA, USA. Aug 2014 - Present  
**B.S. & M.S.** Mathematics, Nankai University, China. Sep 2008 - May 2014

## WORKING EXPERIENCE

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**Participant** *Intel Corporation*, Santa Clara, CA, USA.

- **Large-scale Distributed Optimization in Deep Neural Networks:** Implemented various of standard approaches to train deep neural network and applied distributed high performance computing technique for acceleration. Fall 2015

**Internship** *Business Analytics and Monitoring*, Siemens Corporation, Princeton, NJ, USA.

- **Deep Learning via HF approach:** Proposed new Hessian-Free type of algorithm by exploring negative curvature of deep learning model, which guarantees to reach local optimality instead of sticking at critical point. Summer 2015

- **Portfolio Credit Risk:** Developed optimization models to measure default risk of a portfolio by using normal copula model and importance sampling techniques to attain more reliable and stable prediction. Summer 2015

**Research Assistant** *Department of Industrial and Systems Engineering*, Lehigh University, PA, USA.

- **Dual Free SDCA algorithm with adaptive probability:** Develop optimal probability distribution for dual free SDCA framework. Better performance is shown by take consideration of sub-optimality of each coordinate. Fall 2015

- **Distributed Algorithms for Large-scale Optimization Problems:** Propose asynchronous distributed algorithms for empirical minimization problem. Spring 2015

**Teaching Assistant** *Department of Industrial and Systems Engineering*, Lehigh University, PA, USA.

- **Applied Engineering Statistics** Fall 2014 & Spring 2015

## SELECTED COURSES AND PROJECTS

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**Massive Data Mining, Pattern Recognition**, Lehigh University.

- **Question & Answer System:** Designed competitive Q&A system to attain up to 39.5% accuracy by detecting Apache Lucene and Natural Language Toolkit, etc. Fall 2015

- **Digit Recognizer:** Implemented a Matlab software package to compare various of classifier technologies (Support Vector Machine, Artificial Neural Network, Decision Tree, KKN) for character-image classification problem. Spring 2015

**Computation Method, Optimization in Machine Learning**, Lehigh University.

- **Compressed Sensing:** Using  $\ell_1$ -regularized lasso model to recovery pictures with missing pixels. Multiple algorithms (ISTA, FISTA, GRPS) are implemented in C++ and compared. Fall 2015

**Integer Programming, Nonlinear Programming** Lehigh University.

- **Mixed binary problem solver:** Implemented a Python software package to address mixed binary programming problem with branch and cut method. Spring 2014

- **Nonlinear optimization solver:** Developed a well-optimized MatLab package for unconstrained nonlinear optimization with various of Nonlinear Optimization techniques (SD, Newton, CG, BFGS/DFP, TR, etc.). Spring 2015

## SKILLS

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**Programming:** C++ (MPI, OPENMP), MATLAB, R, PYTHON (SPARK), MATHEMATICA

**Others:** AMPL, CPLEX, MOSEK, Gurobi, SHELL SCRIPT, HTML, L<sup>A</sup>T<sub>E</sub>X, Mac OS, Linus, Windows

## PUBLICATIONS

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- [1] **Dual Free Adaptive Mini-Batch SDCA for Empirical Risk Minimization**, with Martin Takáč. Under Review by ICML 2016.
- [2] **Dual Free SDCA for Empirical Risk Minimization with Adaptive Probabilities**, with Martin Takáč. Accepted by OptML@NIPS 2015.
- [3] **Estimating Portfolio Loss Probabilities with Optimal Risk Loading Coefficients and Fixed Dependency among Obligors**, with Amit Chakraborty, Ioannis Akrotirianakis. Available online.
- [4] **A Method with Parameter for Solving the Spectral Radius of Nonnegative Tensor**, with Yiyong Li, Qingzhi Yang. Submitted.