QI ZHAO

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EDUCATION

Boston University, Boston   *Dec 2015 exp*
PhD candidate in System Engineering (Concentration: Modeling and Data Analysis)
Boston University, Boston   *Sep 2010 - May 2012*
M.S. in Electrical and Electronic Engineering (Concentration: Operation Research)   GPA: 3.83 of 4
University of Science and Technology Beijing, Beijing, China   *Sep 2006 - June 2010*
B.S. in Electric Automation Engineering (Concentration: System and Control)   GPA: 3.50 of 4
Honors: Excellent Bachelors Thesis; Excellent Student; Excellent Graduate Student Honor

ACADEMIC RESEARCH

Inverse Flux Balance Analysis of Metabolic Network   Nov 2012 - Present
- Developed a novel inverse optimization theory to infer the objective function of the optimization programming problem given approximately optimal solutions; applied the theory to the flux balance analysis to infer the objectives of different bacteria.

Predicting and Controlling the Effects of Bivalirudin in Cardiac Patients   Sep 2011 - Present
- Developed a dynamic model based on rare clinical data by using some machine learning and optimization techniques to predict the effects of bivalidrudin; Applied three different adaptive control laws to control the effects of bivalirudin and to infer the optimal dosage of bivalirudin.

PUBLICATIONS

• Q. Zhao, T. Edrich, and I. C. Paschalidis, A predictive model for the anticoagulant bivalirudin administered to cardiac surgical patients, the 52nd IEEE Conference on Decision and Control, Florence, Italy, December 2013.

• Q. Zhao, T. Edrich, and I. C. Paschalidis, Predicting and evaluating the effect of bivalirudin in cardiac surgical patients, IEEE Transactions on Biomedical Engineering, 2014.

RELATED PROJECTS

Dynamic Inventory Control System with Lead Time (Matlab GUI)   Aug 2013
- Developed a mathematical model to describe dynamic inventory system with finite lead time; Adopted dynamic programming and stochastic process properties to solve optimal ordering policy.

Structural SVMs with Latent Variables (Matlab)   Dec 2012
- Applied this algorithm to precision K ranking application; Simulated by Matlab and test it on real data.

Optimal Dynamic Pricing Policy for M/M/K Queue (C/HTML & Java applet)   May 2011
- Developed a long term total discounted reward queuing system models to describe real life queue management problems; Adopted dynamic programming algorithm and Markov decision process properties to solve optimal pricing policy.

Portfolio Selection Optimization Models and Solution Approach (Matlab)   Apr 2011
- Developed a portfolio selection model to describe how to best diversify investment to meet liabilities and maximize the expected profit while minimize the risk; Adopted stochastic programming, dynamic property, linear and nonlinear programming algorithm to build the model and solve optimal policy.

TECHNICAL STRENGTHS & LANGUAGES

Skills	Mathematical Modeling, Machine Learning, Statistics, Data Analysis.
Computer Languages	Matlab, C/C++, Python, PHP, R.
Tools & Databases	Cplex, Gurobi, MySQL, Emacs, Microsoft office.
Languages	Chinese (Native), English (proficient).