Fei Peng

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Employment and Experience

Industry

Optimized Markets, Inc.   **Pittsburgh, PA**
Director of Engineering   10/2015 – current
- Within the startup company and CMU spin-off, took responsibility for the R&D efforts in developing market-leading systems for advertising sales, scheduling and pricing using optimization and machine learning tools
- Interacted with customers in gathering requirements, supporting and tracking project progress, and collecting feedback
- Involved in decisions including setting the direction for products and hiring

FedEx Services   **Memphis, TN**
Senior Revenue Management Analyst   07/2013 – 11/2013
- Led the customer segmentation study for all customers in Asia-Pacific, to gain insight in their spending patterns and determine the automated individual pricing policy
- Managed U.S. pricing effectiveness by monitoring the performance of customer segments, used findings to guide strategy, recommendations and execution
- Participated in the integration of pricing support systems across global regions and operating companies

Schlumberger-Doll Research   **Cambridge, MA**
Math & Modeling Intern   06/2012 – 08/2012
- Performed exploratory research study for robust optimization methods
- Investigated optimization schemes applicable to a wide variety of problems in and out of oilfield production systems

ABB (China) Limited   **Beijing, China**
Supply Chain Management Intern   07/2007 – 09/2007
- Led individual Car Leasing Project involving all 25 branches in Mainland China
- Surveyed and evaluated qualifications and quotes of major car leasing companies. Recommended qualified leasing suppliers for each branch to the VP

Academic

Computer Science Dept., Carnegie Mellon University   **Pittsburgh, PA**
Research Associate   12/2013 – 09/2015
- Worked on NSF funded Accelerating Innovation Research project for developing electronic markets for TV and cross-media advertising
- Designed and incorporated the state-of-the-art in optimization and artificial intelligence technologies to achieve market clearing efficiency and allow expressive bidding languages

IOE Department, University of Michigan   **Ann Arbor, MI**
Research Assistant   12/2009 – 05/2013
- Conducted research on radiation therapy treatment plan optimization problems
- Developed novel models and techniques to take into account the latest advances in treatment equipment, and handle uncertainty during treatment
- Designed solution algorithms that achieved state-of-the-art plan quality while dramatically shortening the planning time for cancer treatments

Radiation Oncology, University of California San Diego   **San Diego, CA**
Visiting Graduate Student   06/2011 – 08/2011
- Led the effort to develop an efficient algorithm for designing treatments for the Volumetric Modulated Arc Therapy with physicians and fellow researchers
- Resulted in plans matching and outperforming leading commercial planning systems

IOE Department, University of Michigan   **Ann Arbor, MI**
Graduate Student Research Assistant   06/2010 – 04/2011
- Worked with Waylogics LLC on NSF funded Green Fleet Management System project
- Contributed to an integrated vehicle fleet and mobile workforce management system that minimizes cost of fuel and environmental impact
- Provided routing strategies through route assignments that took into account different types of drive trains and different fuel consumption along different types of route

Education

University of Michigan   **Ann Arbor, MI**
Ph.D., Industrial and Operations Engineering (08/2013)
Thesis: *Optimization Methods for Volumetric Modulated Arc Therapy and Radiation Therapy Under Uncertainty*
Committee: Marina A. Epelman (Co-advisor), H. Edwin Romeijn (Co-advisor), Amy M. Cohn, Jeffery A. Fessler, Martha M. Matuszak

University of Michigan   **Ann Arbor, MI**
M. S., Industrial and Operations Engineering (04/2010)

Beihang University   **Beijing, China**
B. Mgmt., Industrial Engineering (07/2008)

Beihang University   **Beijing, China**
B. S. Minor, Applied Mathematics (07/2008)

Professional Service

- Reviewer for *Production and Operations Management, Medical Physics*

Publications

Journal Articles / Refereed Conference Proceedings

- F. Peng, T. Sandholm. Optimal learning of large Bayesian network structure using integer programming. Working paper
- F. Peng, T. Sandholm. Scalable segment abstraction method for advertising campaign admission and inventory allocation optimization. In *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI)*, 2016. Acceptance rate: 24%
- F. Peng, S. Jiang, H. E. Romeijn, and M. Epelman. VMATC: VMAT with Constant Gantry Speed and Dose Rate. *Physics in Medicine and Biology* 60 (2015), 2955-2979
- F. Peng, A. Cohn, O. Gusikhin, and D. Perner. Algorithms for the Hybrid Fleet Vehicle Routing Problem. In *Proceedings of the 1st International Conference on Vehicle Technology and Intelligent Transport Systems* (2015)
- Z. Tian, F. Peng, M. Folkerts, J. Tan, X. Jia, and S. Jiang. Multi-GPU implementation of a VMAT treatment plan optimization algorithm. *Medical Physics* 42, 2841 (2015)
- F. Peng, X. Jia, X. Gu, M. Epelman, H. E. Romeijn, and S. Jiang. A New Column Generation Based Algorithm for VMAT Treatment Plan Optimization. *Physics in Medicine and Biology* 57 (2012), 4569-4588

Book Chapters

- Z. Tian, Q. Gautier, X. Gu, C. Men, F. Peng, M. Zarepisheh, Y. J. Graves, A. Uribe-Sanchez, X. Jia, and S. B. Jiang. SCORE System for Online Adaptive Radiotherapy. Chapter in: *Applications of GPU-based High Performance Computing in Radiation Therapy*, Xun Jia and Steve Jiang, editors. Taylor and Francis (2015)
- F. Peng, Z. Tian, H. E. Romeijn, and C. Men. VMAT Treatment Plan Optimization. Chapter in: *Applications of GPU-based High Performance Computing in Radiation Therapy*, Xun Jia and Steve Jiang, editors. Taylor and Francis (2015)

Patents

- Automated allocation of media campaign assets to time and program in digital media delivery, T. Sandholm, J. Dickerson, F. Peng, *U.S. Patent Application*, January 2016

Other

- F. Peng, Optimization Methods for Volumetric Modulated Arc Therapy and Radiation Therapy Under Uncertainty. *Ph.D. thesis*, University of Michigan 2013
- F. Peng, K. Rashid, and B. Couet, Robust optimization methods for oilfield problems under uncertainty. *Technical Report OFSR/2012/132/MMC*, Schlumberger-Doll Research

Invited Presentations

- T. Sandholm and F. Peng. Scalable segment abstraction method for advertising campaign admission and inventory allocation optimization. *INFORMS Annual Conference*, Nashville, TN (2016)
- F. Peng, H. E. Romeijn, and M. Epelman. A robust re-optimization scheme for Radiation Therapy under uncertainty. *INFORMS Annual Conference*, Phoenix, AZ (2012)
- F. Peng, X. Jia, X. Gu, M. Epelman, H. E. Romeijn, and S. Jiang. Treatment Plan Optimization for Volumetric Modulated Arc Therapy (VMAT). Radiation Oncology Department, *Massachusetts General Hospital* (2012)
- F. Peng, X. Jia, X. Gu, M. Epelman, H. E. Romeijn, and S. Jiang. Models and algorithms for IMAT and VMAT arc therapy plan optimization in Radiation Oncology. *INFORMS Annual Conference*, Charlotte, NC (2011)
- F. Peng, A. Cohn, and O. Gusikhin. Heterogeneous vs. homogeneous vehicle routing: algorithms and implications (Poster). *INFORMS Annual Conference*, Charlotte, NC (2011)
- M. Epelman, F. Peng, and H. E. Romeijn. Models and algorithms for IMAT and VMAT arc therapy plan optimization in Radiation Oncology. *SIAM Conference on Optimization*, Darmstadt, Germany (2011)
- F. Peng. Treatment plan optimization for volume metric modulated arc therapy (Poster) *Engineering Graduate Symposium*, University of Michigan, Ann Arbor, MI (2010)
- F. Peng, M. Epelman and H. E. Romeijn. Exact method for volumetric modulated arc therapy (VMAT) treatment plan optimization. *INFORMS Annual Conference*, Austin, TX (2010)
- F. Peng, M. Epelman, H. E. Romeijn, and M. Sir. Optimization models for radiation therapy under uncertainty. *INFORMS Annual Conference*, San Diego, CA (2009)

Fellowships and Awards

- IOE Bonder Fellowship for Applied Operations Research (sole winner with full fellowship), 2010 – 2011
- Engineering Graduate Symposium Technical Session Award ($500), Nov 2010
- IOE Department Fellowship (full fellowship), Sep 2009 – May 2010

Fellowships and Awards (Minor)

- Rackham Domestic Travel Grant (&600-$700), University of Michigan, 2010 – 2012
- Graduate Student Research Assistantship, University of Michigan, 2009 – 2010
- 1st Prize in National English Contest for College Students, Beijing, China, 2007
- Academic Excellence Scholarship, Beihang University, 2005 & 2006
- 3rd Prize in Mathematics Contest, Beihang University, 2005
- Excellent Student Cadre Scholarship, Beihang University, 2005

Teaching

IOE Department, University of Michigan   **Ann Arbor, MI**
Graduate Student Instructor   Fall 11 – Fall 12, Winter 13
IOE441: Production and Inventory Control (W13)
IOE310: Introduction to Optimization Methods (F11 to F12)
- Assisted the instructor in teaching and management of 100+ junior/senior level students
- Held office hours, developed and taught weekly lab sessions
- Mentored students from project groups

Leadership and Activities

China Business Challenge, University of Michigan   **Ann Arbor, MI**
Semi-finalist   10/2012 – 11/2012
- Contributed to the development of the business plan for an organic food store in China
- Aimed at building an organic-only store chain and developing the footprint of organic food in China by educating customers about the benefits over conventional produces

Harvard National Model United Nations Conference   **Boston, MA**
University Delegation Advisor   11/2007 – 02/2008
- Managed the training contents and organized trip itineraries for the 20-person delegation
- Facilitated external communications with Harvard and other universities

School of Economics and Management, Beihang University   **Beijing, China**
Class Monitor   09/2004 – 09/2005
- Helped class make improvements in academic performance and activities
- Awarded Excellent Student Cadre at the end of academic year

Professional Affiliations

- Institute for Operations Research and the Management Sciences (INFORMS)

Computer Skills

- Programming languages and frameworks
    - Experienced: C, C++, Java, Python; Ruby-on-Rails
    - Familiar: Javascript, Ruby, SAS; Electron, AngularJS
- Machine learning tools: Xgboost, Scikit-learn
- Technical computing software and solvers: AMPL, Coin-OR, Cplex, Gurobi, Matlab
- Parallel computing: CUDA, OpenMP
- Database query writing (SQL)
- Unix operating system and script writing