

# Fei Peng

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<http://fei-peng.github.io>

## Education

### **University of Michigan**

**Ann Arbor, MI**

Ph.D., Industrial and Operations Engineering (08/2013), GPA: 3.95/4.0

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)

## Employment and Experience

### *Industry*

#### **Optimized Markets, Inc.**

**Pittsburgh, PA**

*Director of Engineering*

10/2015 – current

- Within the startup company, took responsibility for the research and development efforts in developing market-leading optimization systems for advertising sales, allocation, and scheduling
- Interacted with customers in gathering requirements, tracking project progress and collecting feedback

#### **FedEx Services**

**Memphis, TN**

*Senior Revenue Management Analyst*

07/2013 – 11/2013

- Led the customer segmentation study for all customers in the Asia-Pacific region 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

#### **Beijing People's Political Consultative Conference**

**Beijing, China**

*Part-time Analyst*

05/2005 – 09/2005

- Sought a new method for evaluating proposals to replace manual assessment process
- Analyzed statistics on nine quality parameters, identified key properties of good proposals
- Proposed a statistical method for evaluating new proposals, drastically reduced the resources needed in the assessment process

## Academic

**Computer Science Department, Carnegie Mellon University**  
*Research Associate*

**Pittsburgh, PA**  
12/2013 – 09/2015

- Worked on NSF funded project for developing electronic markets for TV and cross-media advertising
- Designed and incorporated state-of-the-art optimization algorithms to achieve efficiency and allow expressive bidding languages

**IOE Department, University of Michigan**  
*Research Assistant*

**Ann Arbor, MI**  
12/2009 – 05/2013

- Conducted research on Radiation Therapy treatment plan optimization problems
- Developed models that took into account the latest advances in equipment and technology
- Designed solution algorithms that achieved improved plan quality while shortening the planning time through parallel computing

**Radiation Oncology, University of California San Diego**  
*Visiting Graduate Student*

**San Diego, CA**  
06/2011 – 08/2011

- Led the effort to develop an efficient algorithm for designing treatments for the Volumetric Modulated Arc Therapy through collaboration with physicians and fellow researchers
- The resulting plans matched and outperformed leading commercial planning systems

**IOE Department, University of Michigan**  
*Graduate Student Research Assistant*

**Ann Arbor, MI**  
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 the 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

## Professional Service

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

## Publications

### *Journal Articles / Refereed Conference Proceedings*

- 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: < 0.25
- 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

- 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
- IOE Department Fellowship, Sep 2009 – May 2010
- Engineering Graduate Symposium Technical Session Award (\$500), Nov 2010

### *Fellowships and Awards (Minor)*

- Rackham Domestic Travel Grant (\$700), University of Michigan, 2012
- Rackham Domestic Travel Grant (\$600), University of Michigan, 2011
- Graduate Student Research Assistantship, University of Michigan, 2009 – 2010
- Rackham Domestic Travel Grant (\$600), University of Michigan, 2010
- Graduate Student Research Assistantship, University of Michigan, Summer 2009
- 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**

*Graduate Student Instructor*

*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 to help students understand the lecture and assignments, as well as more advanced topics related to the class
- Developed and taught weekly lab sessions to provide students with optimization software and techniques to solve various problems (IOE310) - Mentored students from project groups, provided individual tutoring when needed (IOE310)

**Ann Arbor, MI**

Fall 11 – Fall 12, Winter 13

## Leadership and Activities

### **China Business Challenge, University of Michigan**

*Semi-finalist*

- 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

**Ann Arbor, MI**

10/2012 – 11/2012

### **Harvard National Model United Nations Conference**

*University Delegation Advisor*

- Managed the training contents and organized trip itineraries for the 20 person delegation
- Facilitated external communications with Harvard and other universities

**Boston, MA**

11/2007 – 02/2008

### **School of Economics and Management, Beihang University**

*Class Monitor*

- Helped class make improvements in academic performance and activities
- Awarded Excellent Student Cadre at the end of academic year

**Beijing, China**

09/2004 – 09/2005

## Professional Affiliations

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

## Computer Skills

- Programming languages: C, C++, Java, Python, SAS
- Technical computing software and solvers: AMPL, Coin-OR, Cplex, Gurobi, LOQO, Matlab
- Web programming: Ruby on Rails, JavaScript
- Parallel computing: CUDA, OpenMP
- Simulation software: Arena, ProModel
- Database query writing
- Unix operating system and script writing
- Miscellaneous: Git