
Research Interests

Mixed integer nonlinear optimization
Optimization under uncertainty
Large scale optimization
Computing in prescriptive analytics
Real-life problem solving in industrial settings

Education

- 2012 – Present **PhD**, *Lehigh University, Industrial and Systems Engineering*, Bethlehem, PA.
2010 – 2012 **M.S.**, *Bilkent University, Industrial Engineering*, Ankara, Turkey.
2005 – 2010 **B.S.**, *Bilkent University, Industrial Engineering*, Ankara, Turkey.

Work Experience

- 2015 (Summer) **Givens Associate PhD Intern**, *Argonne National Laboratory*, Darien, IL.
Advisor: Sven Leyffer
 - Generated new models for Mixed Integer Partially Differential Equation Constrained Optimization (MIPDECO) problem library
 - Developed test sets for MIPDECO to compare Mixed Integer Nonlinear Optimization (MINLP) solvers
- 2013 (Summer) – 2014 (Fall) **Research Assistant**, *Lehigh University, College of Engineering and Applied Sciences*, Bethlehem, PA.
Advisors: Robert Storer and Luis Zuluaga
 - Applied statistical approaches to analyze real-time data
 - Developed mixed integer nonlinear optimization models for real-life problems for a co-op energy project
- 2013 (Summer) – 2014 (Fall) **Co-Op PhD Intern**, *Air Products and Chemicals, Inc.*, Allentown, PA.
Advisor: Camillo Mancilla
 - Analysis of cost functions using real-time data in gas production
 - Measured the relation between cost parameters and resulting cost functions using statistical approaches
 - Solution methodology for real-time nonlinear optimization problems
 - Implemented a conic cut algorithm on relaxed gas network optimization problems
 - Implementation of adaptive curve algorithm with multi linear regression on real-time data
 - Developed an algorithm for regressor estimation in real time in MATLAB
- 2009 – 2010 **Senior Project Intern**, *Intel Corporation*, Ankara, Turkey.
Utilized a decision support system for retails to improve supply chain management (Team project)
- 2009 (Summer) **Quality Management Intern**, *Medicana International Hospital*, Ankara, Turkey.
 - Developed a computer simulation model of the internal disease outpatient system

Research Experience

- 2012 (Fall) – Present **PhD Thesis**, *Lehigh University, College of Engineering and Applied Sciences*, Bethlehem, PA.
Advisors: Robert Storer and Luis Zuluaga
Title: Developing solution methodologies for mixed integer nonlinear problems under uncertainty
 - Deriving time-efficient approaches to solve nonlinear optimization problems in real time.
 - Second order cone relaxation methods and strengthening strategies
 - Providing lower and upper bounds in short time compared to the original problem formulation
 - Strategies to handle integer variables in quadratic equality constrained problems (in progress)
 - Handling uncertainty in mixed integer quadratic equality constrained problems (in progress)
 - Application of aforementioned methods in practical settings, specifically for gas pipeline networks
- 2010 – 2012 **Master Thesis**, *Bilkent University*, Ankara, Turkey.
Advisor: Bahar Yetiş Kara
Title: Organ Transplantation Logistics: Turkey Case
 - Developed mathematical models to improve intra-regional organ flow of regional coordination centers
 - Modeled discrete-event simulation to compare performances of status quo and proposed systemsThis project was performed in collaboration with the Organ and Tissue Transplantation Board of Ministry of Health of Turkey

- 2011 (Fall) **Graduate Level Course Project**, *Bilkent University*, Ankara, Turkey.
Advisor: Barbaros Tansel
Title: *Optimal Hospital Network in Ankara*
- Developed a decision support system that uses an optimization model that considers real data.
 - Presented a user interface that combines Cplex, Java, JavaScript, JQuery and Google Maps API.
- 2009 (Fall) **Undergraduate Research Project**, *Bilkent University*, Ankara, Turkey.
Advisors: Emre Alper Yildirim and Kaan Gokbayrak
Title: *Heuristics for Control of Wireless Mesh Networks*
- Developed heuristics for providing near optimal solutions within time bound for wireless mesh networks

Teaching Experience

- 2015 (Spring) – **Teaching Assistant**, *Lehigh University, College of Business and Economics*, Bethlehem, PA.
Present IBE 250: Integrated Business and Engineering Honors Program Junior Lab
- Enhanced and managed the online business game for teaching course material
- 2010 – 2012 **Teaching Assistant**, *Bilkent University*, Ankara, Turkey.
Courses: Principles in Engineering Management, Production System Design, Project Scheduling

Professional Activities

- 2014 **Reviewer**, *European Journal of Operational Research*.
2013 **Writer**, *INFORMS Annual Meeting 2013, INFORMS E-News*, Minneapolis, MN.
2011 **Editor**, *Bilkent University Industrial Engineering Senior Projects 2011*, ISBN: 978-975-6090-64-0, Meteksan Matbaacilik, May 2011.

Presentations

- 2015 **Obtaining Bound Information in Operation Optimization of Gas Pipeline Networks**, with *Camilo Mancilla, Robert Storer and Luis Zuluaga*.
- INFORMS Annual Meeting, Philadelphia, PA, November 2015
 - COR@L PhD Seminar, Lehigh University, November 2015
- 2014 **An Iterative Approach to Solve Gas Pipeline Optimization Problems**, with *Camilo Mancilla, Robert Storer and Luis Zuluaga*.
- INFORMS Annual Meeting, San Francisco, CA, November 2014
 - COR@L PhD Seminar, Lehigh University, 2015 (Spring)
- 2012 (Fall) **Organ Transplantation Logistics: Turkey Case**, with *Bahar Yetiş Kara*.
- YAEM National Congress on Operations Research and Industrial Engineering, Dogus Uni, 2012 (Spring)
 - COR@L PhD Seminar, Lehigh University, 2012 (Fall)

Honors and Awards

- 2014 – Present **P.C. Rossin Doctoral Fellow**.
2014 **Cum Laude Award**, *INFORMS Annual Meeting*, Lehigh University INFORMS Student Chapter.
2012 – 2013 **Dean's Doctoral Fellowship**, *Lehigh University*.
2010 – 2012 **Graduate Level Education Scholarship**, *Scientific and Technological Research Council of Turkey*.
2010 – 2012 **Full scholarship in M.S. education**, *Bilkent University*.
2006 – 2012 **Honor and High Honor Standing**, *Degrees at every semester during B.S. and M.S. studies*.
Awarded by Faculty of Engineering, Bilkent University.

Skills and Activities

- Languages Turkish (Native), German (Intermediate), French (Basic), Japanese (Basic)
Programming C++, Javascript, PHP, Python, SQL
Software AMPL, ARENA, CPLEX, CuPPy, GAMS, Gurobi, MATLAB, PuLP, SYMPHONY
Other Version Control (SVN, Git)
- Leadership Lehigh INFORMS Student Chapter Secretary (2013), ISE Department Council PhD Representative (2014), Department Representative in Lehigh University Graduate Student Senate (2014–Present)
- Membership INFORMS Student Member (2012–), INFORMS New York Chapter (2012–), INFORMS Computing Society (2013–), INFORMS Optimization Society (2013–)