

### Research Interest and Expertise

Cutting-edge optimization algorithms and software  
Mixed integer optimization and mixed integer second order cone optimization  
Quantitative portfolio optimization and asset allocation problems  
Simulation modeling and simulation optimization algorithms

### Education

- 2012–Present **Ph.D. in Industrial Engineering**, *Lehigh University*, Bethlehem, PA, GPA: 3.93/4.00.  
2010–2012 **M.S. in Industrial Engineering**, *Bilkent University*, Ankara, Turkey, GPA: 3.71/4.00.  
2005–2010 **B.S. in Industrial Engineering**, *Bilkent University*, Ankara, Turkey, GPA: 3.50/4.00.

### Research Experience

- 2012–Present **PhD Research**, *Lehigh University*, Bethlehem, PA, Advisor: Tamás Terlaky.  
Optimization Algorithms and Software  
  - Currently working on the development of a mixed integer second order cone optimization solver
  - Applied disjunctive conic and cylindrical cuts on problems arise in financial optimization
  - Worked on branching decisions in mixed integer second order cone optimization
- 2010–2013 **Master Thesis**, *Bilkent University*, Ankara, Turkey, Advisor: Nesim K. Erkip.  
*Title*: Final Phase Inventory Management of Spare Parts Under Non-homogeneous Poisson Demand Rate  
  - Derived two heuristic approach to solve a real-world problem efficiently
  - Achieved 4% optimality gap on average in homogeneous demand cases
- 2009–2010 **Undergraduate Research**, *Bilkent University*, Ankara, Turkey, Advisor: Murat Fadiloğlu.  
Undergraduate research project, PLPE (Production Line Performance Emulator)  
  - Developed an online web simulation tool (PLPE) for Small and Medium-Sized Enterprises

### Project Experience

- 08/2015–  
Present **SAS Institute**, *Year-round Operations Research Intern*, Advisor: Imre Pólik.  
Development of a second order cone optimization solver  
  - Currently working on development of a conic optimization solver
- 06/2015–  
08/2015 **SAS Institute**, *Operations Research Summer Fellow*, Advisors: Yan Xu, Joshua Griffin.  
*hippo*: Hyperparameter optimization for machine learning problems  
  - Developed a framework for hyperparameter optimization of machine learning algorithm parameters
  - Implemented an efficient update procedure for surrogate based modeling
  - Tested on various instances, currently working on publishing results
- 06/2014–  
08/2014 **SAS Institute**, *Operations Research Summer Fellow*, Advisor: Joshua Griffin.  
*PARIS*: A parallel multi-start approach for discrete simulation-based optimization  
  - Developed a state-of-art high performance simulation optimization framework
  - Enhanced an existing SBO algorithm with parallelization, multi-start and ranking-selection approaches
  - Provided numerical experiments to show dominance over existing algorithms
  - Reduced total solution time by 49% and decreased confidence interval by more than 54% on standard test set
- 2012–Present **ORComplete**, *Collective Blog about Operations Research Studies*, [www.orcomplete.com](http://www.orcomplete.com).  
  - Started a community blog and an initiative social media project to write about contemporary OR topics
  - Reached more than 7000 visitors within first year
  - Organized 7 web seminars for operations research / industrial engineering students and practitioners
- 2011–2012 **Android Application Development**, *Locishare*.  
  - Developed an Android OS based application for multimedia sharing on social networks
  - Maintained a web-service associated with the mobile application for 1 year
- 2011 **Network Project**, *Bilkent University*, Ankara, Turkey.  
  - Conducted a project on allocation of hospitals on Ankara network, based on real population and road data
  - Developed a software tool on Java, Javascript, PHP and JQuery that works with commercial optimization solvers

- 2009–2010 **Senior Project**, *Bilkent University*, Ankara, Turkey, Advisor: Prof. Barbaros Ç Tansel.  
Optimization on Internal Logistics Activities in BSH Washing Machine Factory
- Worked with a team to improve internal logistic activities in a manufacturing environment
  - Lead the project team as the project representative for 1 year
  - Contributed to development of a decision support system which is used by the company
  - Proposed an analytical approach that utilizes and combine optimization, heuristic and simulation approaches

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## Publications

Sertalp Bilal Çay, Enes Bilgin, Cansu Çakır, Yasemin Arslan, Mehmet Fatih Cabioğlu, Barbaros Tansel. *Optimization on Internal Logistics Activities in BSH Washing Machine Factory*. *Endüstri Mühendisliği*, Vol. 21,3, pp. 25-38, Sep 2010. – (In Turkish with English abstract).

Sertalp Bilal Çay, Julio C. Góez, Tamás Terlaky. *Effects of disjunctive conic and cylindrical cuts on asset allocation problems*. (In preparation).

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## Presentations

- 2013–2015 Disjunctive conic and cylindrical cuts for portfolio optimization problems,
- Invited Session, INFORMS Annual Meeting, Philadelphia, PA, November, 2015
  - Invited Session, ISMP 2015, Pittsburgh, PA, July, 2015
  - CORS / INFORMS Joint Meeting, Montreal, Canada, June, 2015
  - Invited Session, INFORMS Annual Meeting, San Francisco, CA, November, 2014
  - COR@L Seminar, Lehigh University, Bethlehem, PA, September, 2013
- 2015 *hippo*: Hyperparameter optimization for machine learning problems,
- PhD Seminar, Lehigh University, Bethlehem, PA, September, 2015
- 2014 *PARIS*: A parallel multi-start approach for discrete simulation-based optimization,
- PhD Seminar, Lehigh University, Bethlehem, PA, September, 2014
  - SAS Institute Optimization Brainstorm, Cary, NC, August, 2014
- 2014 Development of disjunctive conic and cylindrical Cuts for MISOCO and their applications to radiation therapy treatment optimization,
- *Poster Presentation*: Intensity Modulated Radiation Therapy II, Lehigh Uni., Bethlehem, PA, May, 2014
- 2012 Final phase inventory management of spare parts under non-homogeneous Poisson demand rate,
- COR@L Seminar, Lehigh University, Bethlehem, PA, September, 2012
  - YA/EM Operations Research and Industrial Engineering Society Annual Meeting, Doğuş University, Istanbul, July, 2012
  - *Poster Presentation*: Sixth Annual Workshop on Supply Chain and Logistics, Bilkent University Industrial Engineering Department, Ankara, June, 2012

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## Work Experience

- 09/2015–  
Present **SAS Institute**, *Year-Round Operations Research Intern (Part-time)*, Advisor: Imre Pólik.
- 08/2012–  
05/2015 **Teaching Assistant**, *Lehigh University*, Bethlehem, PA,  
*P.C. Rossin College of Engineering and Applied Science*  
*College of Business and Economics*.  
Instructors: Robert Storer, George Wilson, Hisham Nabaa
- Worked as teaching assistant of many undergraduate and graduate level courses
  - Taught in lab sessions of graduate-level simulation course for 2 semesters
  - Prepared and graded assignments, quizzes, projects for graduate-level courses and conducted weekly office hours
  - Led undergraduate teams for the international annual simulation competition
  - Nominated for the *academic excellence as a teaching assistant award* by students
- 06/2014–  
08/2014 **Summer Intern in Operations Research Department**, *SAS Institute*, Cary, NC.  
Advisors: Joshua Griffin, Emily Nada
- Worked as a graduate summer fellow in Nonlinear Optimization Group
  - Presented academic articles and prepared reports about the literature
  - Worked on a simulation based optimization project for the SAS Simulation Studio and SAS Operations Research packages
  - Gave a speech about the project and results obtained at then end of the project
- 09/2010–  
06/2012 **Research Assistant**, *Bilkent University*, Ankara, Turkey.
- Researched on inventory theory and simulation which is supported by TUBITAK (The Scientific and Technological Research Council of Turkey)

- 09/2010–06/2012 **Departmental Assistant / System Administrator**, *Bilkent University*, Ankara, Turkey.
  - Developed and maintained the academic information systems and database
  - Managed the department web-page for 2 years
  - Completed many departmental duties, such as management of TA duties and course registrations
- 06/2009–08/2009 **Intern**, *Mercedes-Benz Türk AŞ*, Istanbul, Turkey.
  - Worked on enhancement of inventory management and purchasing strategy of critical SKU
  - Increased the on-shelf availability of periodic items to 99% and decreased purchasing costs by 30%
- 06/2008–07/2008 **Intern**, *Park Machine and Spare Parts Co.*, Nallıhan, Turkey.
  - Designed and led to implementation of logistic-oriented stage layout
  - Introduced usage of basic optimization tools such as Excel to planning team of more than 15 workers

## Awards and Certificates

- 2015 INFORMS Magna Cum Laude Award for *Lehigh University INFORMS Student Chapter*
- 2014–Present P.C. Rossin Doctoral Fellow, Lehigh University
- 2014, 2015 SAS Operations Research Summer Fellow in the Operations Research R&D organization, SAS Institute
- 2012–2014 Dean’s Doctoral Assistantship, Lehigh University
- 2010–2012 Scholarship by the Scientific and Technological Research Council of Turkey for graduate studies
- 2010–2012 Full scholarship by Bilkent University for graduate studies
  - 2012 High Honor standing in all-semesters and at graduation from MS program
  - 2010 Ranked as the 2nd best senior project in YA/EM 2010 National Student Project Competition in Turkey
  - 2010 High Honor standing at graduation from BS program
- 2005–2010 Full scholarship by Bilkent University for undergraduate studies
  - 2005 Ranked in top 0.1% among approximately 1.5 million attendees in University Entrance Exam (OSS)
  - 2004 Ranked 2nd in IX. Turkey National Mathematics Olympiads in Black Sea Region

## Activities and Volunteer Experiences

- 2015–Present Industrial and Systems Engineering Unit Representative in Lehigh Graduate Student Senate
- 2015–Present PhD Representative in Lehigh ISE Council
  - 2015 INFORMS Annual Meeting 2015 Blogger, Philadelphia, PA
  - 2014 INFORMS Annual Meeting 2014 Blogger, San Francisco, CA
- 2014–2015 President of Turkish Student Club at Lehigh University
- 2014–2015 President of Lehigh University INFORMS Student Chapter
  - 2013 INFORMS Annual Meeting 2013 Blogger, Minneapolis, MN
- 2013–2014 Vice-President of Turkish Student Club at Lehigh University
- 2009–2010 Volunteer for University Personal Support Project, Community Volunteers Club, Bilkent University
  - Volunteered to give lectures to support education of nonacademic personnel’s children

## Professional Membership

- 2013–Present INFORMS Student Member
- 2013–Present Association for Computing Machinery Student Member
- 2013–Present Lehigh University INFORMS Student Chapter Member
- 2013–Present INFORMS Computing Society, INFORMS Optimization Society Member
- 2009–Present FSK (National Art of Photography Club, Turkey) and AFK (Ankara Photography Club, Ankara, Turkey)

## Skills

### Language

- Turkish **Native**
- Japanese **Basic**

### Computer Software and Languages

- Software ARENA, MINITAB, CPLEX, GAMS, Gurobi, MOSEK
- Language Java, C, C++, Python, Javascript, MATLAB / OCTAVE, PHP, SQL, HTML, CSS, Ajax, JQuery, AMPL
- Other L<sup>A</sup>T<sub>E</sub>X, Google Maps API, Facebook Connect API, OAuth, Version Control (Git, SVN)