

Ali Mohammad Nezhad

CONTACT INFORMATION	Office: MATH 811 Department of Mathematics Purdue University West Lafayette, IN 47906 USA	http://coral.ise.lehigh.edu/alm413/ mohamm42@purdue.edu
RESEARCH INTERESTS	Optimization theory, conic optimization, real algebraic geometry, nonlinear optimization, computational optimization	
RESEARCH APPOINTMENT	Purdue University , West Lafayette, Indiana USA Golomb Visiting Assistant Professor, Department of Mathematics (Aug. 2019 - Present) <ul style="list-style-type: none">• Research: <i>Semidefinite optimization and real algebraic geometry</i>• Advisor: Saugata Basu Lehigh University , Bethlehem, Pennsylvania USA Visiting Scholar, Department of Industrial and Systems Engineering (Jan. 2019 - Aug. 2019) <ul style="list-style-type: none">• Research: <i>Parametric analysis of conic optimization problems</i>• Advisor: Tamás Terlaky Purdue University , West Lafayette, Indiana USA Postdoctoral Research Assistant, School of Industrial Engineering (Oct. 2018 - Jan. 2019) <ul style="list-style-type: none">• Research: <i>Convergence and rate analysis of distributed nonconvex optimization algorithms</i>	
EDUCATION	Lehigh University , Bethlehem, Pennsylvania USA Ph.D., Industrial and Systems Engineering (Sept. 2013 - Aug. 2018) <ul style="list-style-type: none">• Thesis: <i>Conic Optimization: Optimal Partition, Parametric, and Stability Analysis</i>• Advisor: Tamás Terlaky• GPA: 3.95/4 Sharif University of Technology , Tehran Iran M.S.c., Industrial Engineering (Sept. 2008 - Jan. 2011) <ul style="list-style-type: none">• Thesis: <i>Two simulation optimization based artificial neural networks algorithms for constrained simulation optimization problems with stochastic constraints</i>• Advisor: Hashem Mahlooji• GPA: 17.89/20 Golpayegan College of Engineering (under scientific support of Sharif University of Technology) , Golpayegan Iran B.S.c., Industrial Engineering (Sept. 2004 - Sept. 2008) <ul style="list-style-type: none">• GPA: 18.17/20	

HONORS AND AWARDS

- Rossin Doctoral Fellow, College of Engineering, Lehigh University Apr. 2016
- 2016 Van Hoesen Family Best Publication Award (Honorable mention), Industrial and Systems Engineering, Lehigh University Apr. 2016
- Deans Doctoral Assistantship, Industrial and Systems Engineering, Lehigh University Sept. 2013
- Grant for graduate studies from Iran National Elites Foundation May 2011
- 16st in the Nationwide Graduate Admission Test May 2008
- 1st among 30 undergraduate students in Industrial Engineering Jun. 2008

MEMBERSHIP

- SIAM Optimization Society Since Sept. 2017
- INFORMS Optimization Society Since Sept. 2017

PAPERS IN PREPARATION

1. Basu S., **Mohammad-Nezhad A.** On the complexity of the central path from the lens of real algebraic geometry
2. Cojocaru M., **Mohammad-Nezhad A.**, Terlaky T. Continuity of solutions to a parametric variational inequality with a constant field

REFEREED JOURNAL PUBLICATIONS

1. **Mohammad-Nezhad A.**, Terlaky T. Parametric analysis of semidefinite optimization. To appear in Optimization (2019)
2. **Mohammad-Nezhad A.**, Terlaky T. Quadratic convergence to the optimal solution of second-order conic optimization without strict complementarity. Optimization Methods and Software (2019) 34(5):960-990
3. Hauenstein J., **Mohammad-Nezhad A.**, Tang T., Terlaky T. On computing the nonlinearity interval in parametric semidefinite optimization. Under review in Mathematics of Operations Research (2019)
4. **Mohammad-Nezhad A.**, Terlaky T. On parametric second-order conic optimization. To be submitted to Mathematical Programming B (2019)
5. **Mohammad-Nezhad A.**, Terlaky T. On the identification of optimal partition for semidefinite optimization. INFOR: Information Systems and Operational Research (2019), DOI: 10.1080/03155986.2019.1572853
6. **Mohammad-Nezhad A.**, Terlaky T. A rounding procedure for semidefinite optimization. Operations Research Letters (2019) 47:59-65
7. Shahabsafa M., **Mohammad-Nezhad A.**, Terlaky T., Zuluaga L., He S., Hwang J., Martins J. A novel approach to discrete truss design problems using mixed integer neighborhood search. Structural and Multidisciplinary Optimization (2018) 58:2411:2429
8. **Mohammad-Nezhad A.**, Terlaky T. A polynomial primal-dual affine scaling algorithm for symmetric conic optimization. Computational Optimization and Applications (2017) 66:577-600

9. **Mohammad Nezhad A.**, Mahlooji H. An artificial neural network meta-model for constrained simulation optimization. *Journal of the Operational Research Society* (2014) 65:1232-1244
10. **Mohammad Nezhad A.**, Manzour H, Salhi S. Lagrangian relaxation heuristics for the uncapacitated single-source multi-product facility location problem. *International Journal of Production Economics* (2013) 145:714-724
11. **Mohammad Nezhad A.**, Aliakbari Shandiz R, Eshraghniaye Jahromi A H. A particle swarm-BFGS algorithm for nonlinear programming problems. *Computers and Operations Research* (2013) 40:963-972
12. **Mohammad Nezhad A.**, Mahlooji H. A revised particle swarm optimization based discrete Lagrange multipliers method for nonlinear programming problems. *Computers and Operations Research* (2011) 38:1164-1174

ACADEMIC
EXPERIENCE

Journal Reviewer

Jan. 2011 to present

- Mathematical Programming
- Computational Optimization and Applications
- Optimization
- Operations Research Letters
- Optimization Letters
- Optimization Methods and Software
- Numerical Algorithms
- CALCOLO
- Computers and Operations Research
- Modeling and Optimization, Theory and Applications
- Journal of Industrial and Management Optimization

Session Chair

- Chair of a session in "Perturbation Analysis of Conic Optimization", Informs Annual Meeting 2018, Pheonix AZ Nov. 2018
- Chair of a session in "Conic Optimization and Integer Programming", MOPTA 2018 Conference, Lehigh University Aug. 2018
- Chair of a session in "Conic Optimization", MOPTA 2017 Conference, Lehigh University Aug. 2017
- Chair of a session in "Dynamic Optimization", MOPTA 2016 Conference, Lehigh University Aug. 2016
- Chair of a session in "Convex and Conic Relaxations for Intractable Optimization Problems", MOPTA 2016 Conference, Lehigh University Aug. 2016
- Chair of a session in "Conic optimization", MOPTA 2016 Conference, Lehigh University Aug. 2016
- Chair of a session in "Polynomial Optimization and Interior Point Methods", MOPTA 2016 Conference, Lehigh University Aug. 2016

TEACHING
EXPERIENCE

Instructor

Aug. 2019 to Present

- Ordinary Differential Equations
Department of Mathematics
Purdue University

Recipient of Teacher Development certificate Level 1 at Lehigh University
Feb. 2018

Teaching Assistant Jan. 2016 to May 2016

- Optimization methods and Software
Industrial and Systems Engineering Department
Lehigh University

Teaching Assistant Jan. 2015 to May 2015

- Stochastic models and applications, Supply chain management
Industrial and Systems Engineering Department
Lehigh University

Teaching Assistant Sept. 2014 to Dec. 2014

- Optimization models and applications,
Industrial and Systems Engineering Department
Lehigh University

Teaching Assistant Jan. 2014 to May 2014

- Engineering economics,
Industrial and Systems Engineering Department
Lehigh University

Teaching Assistant Sept. 2013 to Dec 2013

- Game theory, Design of experiments,
Industrial and Systems Engineering Department
Lehigh University

Teaching Assistant Jan. 2010 to May 2010

- Reliability Engineering,
Industrial Engineering Department
Sharif University of Technology, Tehran, Iran

Teaching Assistant Jan. 2009 to May 2009

- Operations Research (mathematical optimization),
Industrial Engineering Department
University of Science and Culture, Tehran, Iran

Teaching Assistant Sept. 2008 to Dec. 2008

- Operations Research (linear optimization),
Industrial Engineering Department
University of Science and Culture, Tehran, Iran

Teaching Assistant Jan. 2008 to May 2008

- Operations Research (linear optimization),
Industrial Engineering Department
Golpayegan College of Engineering, Golpayegan, Iran

Teaching Assistant Jan. 2007 to May 2007

- Operations Research (linear optimization),
Industrial Engineering Department
Golpayegan College of Engineering, Golpayegan, Iran

Teaching Assistant

Jan. 2006 to May 2006

- Multivariate Calculus,
Industrial Engineering Department
Golpayegan College of Engineering, Golpayegan, Iran

INVITED TALKS,
CONFERENCES,
AND WORKSHOPS

- Workshop on Hyperbolic Polynomials and Hyperbolic Programming, Simons Institute, Berkeley CA Apr. 2019
- AMS short course on sum of squares, Joint Mathematics Meeting, Baltimore MD Jan. 2019
- Parametric analysis of linear conic optimization, Informs Annual Meeting, Pheonix AZ Nov. 2018
- Parametric second-order and semidefnite optimization, Poster session, The Institute for Computational and Experimental Research in Mathematics (ICERM), Providence RI Oct. 2018
- Summer School on Hyperbolic Polynomials, Sums of Squares, and Optimization, Georgia Institute of Technology, Atlanta GA Jun. 2018
- Parametric analysis of semidefnite and second-order cone optimization, Informs Optimization Society Conference, University of Colorado Denver Mar. 2018
- Parametric second-order cone optimization, COR@L seminar, Lehigh University Oct. 2017
- Parametric second-order cone optimization, Informs Annual Meeting, Houston TX Oct. 2017
- Quadratic convergence of Newton's method to the optimal solution of second-order cone optimization, Informs Annual Meeting, Houston TX Oct. 2017
- On the identification of optimal partition and optimal solutions for semidefnite optimization, MOPTA Conference, Lehigh University Aug. 2017
- On the identification of optimal partition for second-order optimization, Poster session, NemFest 2017, Atlanta GA May 2017
- Numerical issues of the interior point methods, in: Computational methods of Optimization, offered by Prof. Martin Takáč in Fall 2016, Industrial and Systems Engineering department, Lehigh University Dec. 2016
- On the identification of optimal partition for semidefnite optimization, Poster session, Informs Annual Meeting, Nashville TN Nov. 2016
- Rounding procedures for a maximally complementary solution of second-order conic optimization, Informs Annual Meeting, Nashville TN Nov. 2016

- Rounding procedures for a maximally complementary solution of second-order conic optimization, COR@L seminar, Lehigh University Sept. 2016
- A rounding procedure for second-order conic optimization, MOPTA Conference, Lehigh University Aug. 2016
- On the identification of optimal partition for semidefinite optimization, Informs Optimization Society Conference, Princeton University Mar. 2016
- A rounding procedure for a maximally complementary solution of SDP, COR@L seminar, Lehigh University Nov. 2015
- A rounding procedure for a maximally complementary solution of SDP, Informs Annual Meeting, Philadelphia PA Nov. 2015
- A polynomial primal-dual affine scaling algorithm for symmetric conic optimization, ISMP, Pittsburgh PA Jul. 2015
- A polynomial primal-dual affine scaling algorithm for symmetric conic optimization, COR@L seminar, Lehigh University Oct. 2014
- Incorporating clique inequalities into a Lagrangian relaxation framework for a facility location problem, COR@L seminar, Lehigh University Nov. 2013

RELEVANT
COURSE WORK

Lehigh University

- **Industrial and Systems Engineering Department:** Convex Analysis and Optimization, Conic Optimization, Nonlinear Programming, Introduction to Mathematical Optimization, Integer Programming, Computational Methods in Optimization
- **Mathematics Department:** Differential Geometry of Curves and Surfaces, Principles of Analysis I, Real and Functional Analysis (audited), General Topology (audited)
- **Computer Science Department:** Advanced Programming Techniques, Advanced Algorithms

Amirkabir University of Technology

- **Industrial and Systems Engineering Department:** Mathematical Programming, Interior Point Methods
- **Mathematics Department:** Advanced Optimization, Combinatorial Optimization

Sharif University of Technology

- **Industrial Engineering Department:** Integer Programming, Advanced Linear Programming, Graph Theory

LANGUAGE

Persian (Native)

English (Fluent)

- Excellent writing, listening and speaking skills

REFERENCES

- Frank Curtis
Associate Professor
Industrial and Systems Engineering
Lehigh University
Phone: (646)789-5490
E-mail: frank.e.curtis@lehigh.edu
- Jonathan Hauenstein
Associate Professor
Applied and Computational Mathematics and Statistics
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- Garth Isaak
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Mathematics
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