# Balabhaskar Balasundaram | CV

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## Appointments

**School of Industrial Engineering & Management** — **Oklahoma State University**

| | |
|---|---|
| *Professor* | *June 2020–Present* |
| *Wilson Bentley Professorship* | *July 2018–Present* |
| *Associate Professor* | *July 2013–June 2020* |
| *Graduate Program Director* | *July 2016–June 2019* |
| *Assistant Professor* | *August 2007–June 2013* |

## Education

**Texas A&M University**
*Ph.D., Industrial Engineering* — *2002–2007*

**Indian Institute of Technology–Madras**
*B.Tech., Mechanical Engineering* — *1998–2002*

## Research Interests

**Theory, algorithms, and computation in network optimization**: Graph signatures; Graph-theoretic clique relaxations; Network design

**Optimization applications**: Computational biology; Social network analysis; Graph-based data mining; Transportation logistics; Production planning; Scheduling

## Publications

Student advisees are starred

### Working Papers

[1] Pouya Ahadi*, Juan S. Borrero, Balabhaskar Balasundaram, and Charles Chen. Stochastic models for generalizing the predicted cross value metric for genetic introgression. 2020. In preparation.

[2] Niloufar Daemi, Juan S. Borrero, and Balabhaskar Balasundaram. Interdicting low-diameter cohesive subgroups in large-scale social networks. 2019. In preparation.

[3] Yajun Lu*, Hosseinali Salemi, Balabhaskar Balasundaram, and Austin L. Buchanan. Fault-tolerant $s$-clubs. 2019. In preparation.

## Under Review

[4] Balabhaskar Balasundaram, Juan S. Borrero, and Hao Pan*. Graph signatures: Identification and optimization. *European Journal of Operational Research*, October 2019. Under Review.

## Journal Articles

[5] Farzaneh Nasirian, Foad Mahdavi Pajouh, and Balabhaskar Balasundaram. Detecting a most closeness-central clique in complex networks. *European Journal of Operational Research*, 283(2):461–475, June 2020.

[6] Babak Farmanesh*, Arash Pourhabib, Balabhaskar Balasundaram, and Austin Buchanan. A Bayesian framework for functional calibration of expensive computational models through non-isometric matching. *IISE Transactions*, May 2020. https://doi.org/10.1080/24725854.2020.1774688.

[7] Zhuqi Miao* and Balabhaskar Balasundaram. An ellipsoidal bounding scheme for the quasi-clique number of a graph. *INFORMS Journal on Computing*, February 2020. https://doi.org/10.1287/ijoc.2019.0922.

[8] Juan Ma* and Balabhaskar Balasundaram. On the chance-constrained minimum spanning $k$-core problem. *Journal of Global Optimization*, 74(4):783–801, August 2019.

[9] Shuzhen Sun, Zhuqi Miao*, Blaise Ratcliffe, Polly Campbell, Bret Pasch, Yousry A. El-Kassaby, Balabhaskar Balasundaram, and Charles Chen. SNP variable selection by generalized graph domination. *PLoS ONE*, 14(1):1–18, January 2019.

[10] Yajun Lu*, Esmaeel Moradi*, and Balabhaskar Balasundaram. Correction to: Finding a maximum $k$-club using the $k$-clique formulation and canonical hypercube cuts. *Optimization Letters*, 12(8):1959–1969, November 2018.

[11] Esmaeel Moradi* and Balabhaskar Balasundaram. Finding a maximum $k$-club using the $k$-clique formulation and canonical hypercube cuts. *Optimization Letters*, 12(8):1947–1957, November 2018.

[12] Zhuqi Miao* and Balabhaskar Balasundaram. Approaches for finding cohesive subgroups in large-scale social networks via maximum $k$-plex detection. *Networks*, 69(4):388–407, July 2017.

[13] Foad Mahdavi Pajouh*, Esmaeel Moradi*, and Balabhaskar Balasundaram. Detecting large risk-averse 2-clubs in graphs with random edge failures. *Annals of Operations Research*, 249(1):55–73, February 2017.

[14] Foad Mahdavi Pajouh*, Balabhaskar Balasundaram, and Illya V. Hicks. On the 2-club polytope of graphs. *Operations Research*, 64(6):1466–1481, November-December 2016.

[15] Juan Ma*, Foad Mahdavi Pajouh*, Balabhaskar Balasundaram, and Vladimir Boginski. The minimum spanning $k$-core problem with bounded CVaR under probabilistic edge failures. *INFORMS Journal on Computing*, 28(2):295–307, April 2016.

[16] Zhuqi Miao*, Balabhaskar Balasundaram, and Eduardo L. Pasiliao. An exact algorithm for the maximum probabilistic clique problem. *Journal of Combinatorial Optimization*, 28(1):105–120, July 2014.

[17] Foad Mahdavi Pajouh*, Zhuqi Miao*, and Balabhaskar Balasundaram. A branch-and-bound approach for maximum quasi-cliques. *Annals of Operations Research*, 216(1):145–161, May 2014.

[18] Svyatoslav Trukhanov, Chitra Balasubramaniam, Balabhaskar Balasundaram, and Sergiy Butenko. Algorithms for detecting optimal hereditary structures in graphs, with application to clique relaxations. *Computational Optimization and Applications*, 56(1):113–130, September 2013.

[19] Sergiy Butenko, Oleksandra Yezerska, and Balabhaskar Balasundaram. Variable objective search. *Journal of Heuristics*, 19(4):697–709, August 2013.

[20] Foad Mahdavi Pajouh*, Balabhaskar Balasundaram, and Oleg A. Prokopyev. On characterization of maximal independent sets via quadratic optimization. *Journal of Heuristics*, 19(4):629–644, August 2013.

[21] Marco Carvalho, Alexey Sorokin, Vladimir Boginski, and Balabhaskar Balasundaram. Topology design for on-demand dual-path routing in wireless networks. *Optimization Letters*, 7(4):695–707, April 2013.

[22] Foad Mahdavi Pajouh*, Dahai Xing, Yingjue Zhou, Sharethram Hariharan, Balabhaskar Balasundaram, Tieming Liu, and Ramesh Sharda. A specialty steel bar company uses analytics to determine available-to-promise dates. *INFORMS Journal on Applied Analytics*, 43(6):503–517, 2013.

[23] Foad Mahdavi Pajouh* and Balabhaskar Balasundaram. On inclusionwise maximal and maximum cardinality $k$-clubs in graphs. *Discrete Optimization*, 9(2):84–97, May 2012.

[24] Trevor Grout, Yang Hong, Jeffrey Basara, Balabhaskar Balasundaram, Zhenyu Kong, and Satish T. S. Bukkapatnam. Significant winter weather events and associated socioeconomic impacts (federal aid expenditures) across Oklahoma: 2000-2010. *Weather, Climate, and Society*, 4(1):48–58, January 2012.

[25] Balabhaskar Balasundaram, Sergiy Butenko, and Illya V. Hicks. Clique relaxations in social network analysis: The maximum $k$-plex problem. *Operations Research*, 59(1):133–142, January-February 2011.

[26] Balabhaskar Balasundaram, Shyam S. Chandramouli*, and Svyatoslav Trukhanov. Approximation algorithms for finding and partitioning unit-disk graphs into co-$k$-plexes. *Optimization Letters*, 4(3):311–320, August 2010.

[27] Balabhaskar Balasundaram and Sergiy Butenko. On a polynomial fractional formulation for independence number of a graph. *Journal of Global Optimization*, 35(3):405–421, July 2006.

[28] Balabhaskar Balasundaram and Sergiy Butenko. Constructing test functions for global optimization using continuous formulations of graph problems. *Journal of Optimization Methods and Software*, 20(4-5):439–452, August-October 2005.

[29] Balabhaskar Balasundaram, Sergiy Butenko, and Svyatoslav Trukhanov. Novel approaches for analyzing biological networks. *Journal of Combinatorial Optimization*, 10(1):23–39, August 2005.

## Book Chapters

[30] Balabhaskar Balasundaram and Foad Mahdavi Pajouh*. Graph theoretic clique relaxations and applications. In P. M. Pardalos, D.-Z. Du, and R. Graham, editors, *Handbook of Combinatorial Optimization*, pages 1559–1598. Springer, New York, 2nd edition, 2013.

[31] Foad Mahdavi Pajouh* and Balabhaskar Balasundaram. Gradient-type methods. In J. J. Cochran, L. A. Cox, P. Keskinocak, J. P. Kharoufeh, and J. C. Smith, editors, *Wiley Encyclopedia of Operations Research and Management Science*, volume 3, pages 2092–2099. John Wiley & Sons, Inc., 2011.

[32] Balabhaskar Balasundaram and Sergiy Butenko. Optimization problems in unit-disk graphs. In C. A. Floudas and P. M. Pardalos, editors, *Encyclopedia of Optimization*, pages 2832–2844. Springer Science + Business Media, New York, 2nd edition, 2009.

[33] Balabhaskar Balasundaram and Sergiy Butenko. Network clustering. In B. H. Junker and F. Schreiber, editors, *Analysis of Biological Networks*, pages 113–138. Wiley, New York, 2008.

[34] Balabhaskar Balasundaram and Sergiy Butenko. Graph domination, coloring and cliques in telecommunications. In M. G. C. Resende and P. M. Pardalos, editors, *Handbook of Optimization in Telecommunications*, pages 865–890. Springer Science + Business Media, New York, 2006.

## Conference Proceedings

[35] Juan Ma* and Balabhaskar Balasundaram. Solving chance-constrained spanning $k$-core problem via decomposition and integer programming. In *Proceedings of the 2013 Industrial and Systems Engineering Research Conference (ISERC 2013)*, pages 2774–2783, Norcross, GA, 2013. Institute of Industrial Engineers.

[36] Zhuqi Miao* and Balabhaskar Balasundaram. Cluster detection in large-scale social networks using $k$-plexes. In *Proceedings of the 2012 Industrial and Systems Engineering Research Conference (ISERC 2012)*, pages 1–10, Norcross, GA, 2012. Institute of Industrial Engineers.

[37] Peerapol Sittivijan, Manjunath Kamath, and Balabhaskar Balasundaram. Models for clustering commodities into logistical families. In *Proceedings of the 2009 International Conference on Value Chain Sustainability (ICOVACS 2009)*, pages 32–37, 2009.

[38] Balabhaskar Balasundaram. Cohesive subgroup model for graph-based text mining. In *Proceedings of the 2008 IEEE International Conference on Automation Science and Engineering (CASE 2008)*, pages 989–994. IEEE, August 2008.

[39] G. Srinivasan, B. Balasundaram, and V. Karthik. Minimizing squared deviation of completion times about a common due date - algorithms and heuristics. In P. Radhakrishnan, S. Palaniswami, P. V. Mohanram, and J. Kanchana, editors, *Proceedings of the Ist International Conference on Logistics and Supply Chain Management*, pages 234–239, Mumbai, August 2001. Allied Publishers.

## Grants

### Principal Investigator/Institutional Lead

- *FLAT: Freight Lane Assignment Tool,* PI: Balasundaram, Co-PIs: Buchanan, Heragu, 1/13/2020–8/16/2020, $163,730. *TreeHouse Foods, Inc.*
- *Optimization-based Aggregate Master Planning Tools for Bay Valley Foods, LLC,* PI: Balasundaram, Co-PIs: Buchanan, Heragu, 10/1/2017–1/31/2020, $250,599. *Bay Valley Foods, LLC.*
- *Collaborative Research: Risk-Averse Cluster Detection in Network Models of Big Data Under Measurement Uncertainty*, OSU PI: Balasundaram, Collaborator: Hicks (Rice University), 4/15/2014–3/31/2018, $271,649. *National Science Foundation*.
- *Clique Relaxations in Biological and Social Network Analysis: Foundations and Algorithms*, PI: Butenko (Texas A&M), Co-PIs: Balasundaram, Boginski (University of Florida), 7/1/2012–6/30/2015, $452,942. *Air Force Office of Scientific Research*.
- *Robust Optimization for Connectivity and Flows in Dynamic Complex Networks*, PI: Balasundaram, Co-PIs: Butenko (Texas A&M), Boginski, Uryasev (University of Florida), 9/15/2009–9/14/2013, $589,092. *Department of Energy*.
- *Data Reduction by Generalized Graph Domination*, PI: Balasundaram, 2/1/2010–7/31/2010, $35,558. *Entero Technologies LLC.*
- *Proactive Approach To Transportation Resource Allocation Under Severe Winter Weather Emergencies*, PI: Balasundaram, Co-PIs: Bukkapatnam, Kong, Hong (University of Oklahoma), 7/1/2009–6/30/2011, $261,194. *Oklahoma Transportation Center*.

### Co-Principal Investigator

- *MRI: Acquisition of Shared High Performance Compute Cluster for Multidisciplinary Computational and Data-Intensive Research*, PI: Brunson, Co-PIs: Balasundaram, Borunda, Fennell, Hoyt, 10/1/2015–9/30/2018, $951,570. *National Science Foundation*.
- *Feasibility Study: Hazardous Material Movement Model for HazMat Transportation in Oklahoma*, PI: Pourhabib, Co-PIs: Balasundaram, Kamath, Zhao, 7/1/2015–9/30/2015, $44,534. *Oklahoma Emergency Management*.
- *Algorithms for Order-Picking (Project 12), RFID Technology Center at the University of Louisville*, PI: Heragu, Co-PIs: Balasundaram, Kamath, Liu, 1/1/2014–3/28/2014, $235,270. *Defense Logistics Agency*.
- *Oklahoma Center for Transportation and Logistics Research, Education and Outreach*, PI: Ingalls, Co-PIs: Balasundaram, Kamath, Liu, 7/1/2011–6/30/2013, $150,000. *Oklahoma Transportation Center*.
- *Collaborative: CELDi (Center for Engineering Logistics and Distribution) Research Experience for Teachers Supplement*, PI: Kamath, Co-PIs: Balasundaram, Ingalls, 12/18/08–7/31/13, $58,000. *National Science Foundation*.
- *Collaborative: CELDi (Center for Engineering Logistics and Distribution) Renewal*, PI: Kamath,

Co-PIs: Balasundaram, Ingalls, 8/1/07–7/31/13, $125,000. *National Science Foundation*.

- *Developing Cutting-Edge Educational, Outreach and Diversity Programs in Transportation and Logistics for Oklahoma*, PI: Kamath, Co-PIs: Balasundaram, Ingalls, Liu, 10/1/2011–12/31/2012, $87,465. *Oklahoma Transportation Center.*
- *ECLIPSE: Environment for Contextualized Learning and Insightful Problem Solving Experiences*, PI: Antonenko, Co-PIs: Balasundaram, Gelder, Greenwood, Nichols, 9/1/2011–8/31/2012, $49,281. *Oklahoma State University Planning Grants.*
- *Development of an Available-To-Promise Decision Support System for Webco Industries*, PI: Liu, Co-PI: Balasundaram, 4/1/2010–6/30/2012, $137,995. *Webco Industries Inc.*
- *A Design Optimization Tool for Supply Chains (DOTS)*, PI: Ingalls, Co-PIs: Kamath, Balasundaram, 6/1/2010–12/31/2011, $21,666. *Center for Excellence in Logistics and Distribution (NSF I/UCRC)*.
- *Acquisition of LIDAR Laser Scanner for Bridge Inspection*, PI: Kong, Co-PIs: Ley, Emerson, Balasundaram, Collins, Liu, 8/1/2010–10/31/2011, $200,000. *Oklahoma Transportation Center*.

## Awards

- *Phoenix Award for Outstanding Faculty,* Graduate and Professional Student Government Association, Oklahoma State University, April 2019.
- *Regents Distinguished Research Award,* Oklahoma State University, November 2016.
- *Research Excellence Award,* College of Engineering Architecture and Technology, Oklahoma State University, April 2016.
- *Award for Excellence in the Teaching of Operations Research*, Institute of Industrial and Systems Engineers, May 2015.
- *Research Excellence Award,* College of Engineering Architecture and Technology, Oklahoma State University, April 2014.
- *President's Cup for Creative Interdisciplinarity, First Place*, member of *i*CREST Center for Bioinformatics and Computational Biology (team leader Dr. Rakesh Kaundal), Oklahoma State University, December 2013.
- *OSU Award of Excellence for Advising*, Oklahoma State University, December 2013.
- *IEM Faculty Award*, School of Industrial Engineering & Management, Oklahoma State University, November 2013.
- *ISERC Best Paper Award (Operations Research Track)* from the IIE Operations Research Division for the paper titled "Solving chance-constrained spanning $k$-core problem via decomposition and integer programming," coauthored with doctoral advisee Juan Ma, May 2013.
- *Outstanding Young Faculty Award*, Halliburton Foundation, Inc., College of Engineering Architecture and Technology, Oklahoma State University, March 2013.
- *CEAT Outstanding Advisor Award*, College of Engineering Architecture and Technology, Oklahoma

State University, December 2012.

- *IIE South Central Region Outstanding Advisor Award*, Institute of Industrial Engineers, May 2011.
- *Pritsker Doctoral Dissertation Award, 2nd Place*, Institute of Industrial Engineers, May 2008.
- *George Kunze Prize*, Texas A&M University, April 2007.
- *U.S. Senator Phil Gramm Doctoral Fellowship*, Texas A&M University, April 2007.
- *Distinguished Graduate Student Award for Excellence in Teaching*, Association of Former Students of Texas A&M University, March 2007.
- *Best Poster Award* for "Constructing test functions for global optimization using continuous formulations of optimization problems on graphs" in the *Workshop on Multiscale Optimization Methods and Applications*, February 26-28, 2004, University of Florida, Gainesville, FL.
- *Best Paper Award* for "A backtracking heuristic for solving U-shaped assembly line balancing problem" in *Shaastra TechFest 2002*, Indian Institute of Technology–Madras, India. (With P. Devarajan).

## Graduate Advising

### Doctoral Students

- Parisa Sahraeian (in progress)
- Hao Pan (in progress)
- Yajun Lu (July 2019)
  - Dissertation: *Finding second-order clubs*.
  - Currently a Visiting Assistant Professor of Analytics and Operations Management at Bucknell University.
- Babak Farmanesh (Co-advisor, August 2018)
  - Dissertation: *Efficient techniques for statistical modeling of calibration and spatio-temporal systems using Gaussian processes*.
  - Currently a Senior Data Scientist at Dell EMC.
- Zhuqi Miao (May 2016)
  - Dissertation: *Combinatorial and global optimization approaches to the maximum quasi-clique problem*.
  - Currently a Health Data Analyst in the Center for Health Systems Innovation at Oklahoma State University.
- Esmaeel Moradi (May 2016)
  - Dissertation: *Decomposition algorithms for detecting low-diameter clusters in graphs*.
  - Currently an Optimization Engineer at Schneider National, Inc.
- Juan Ma (Co-advisor, December 2015)
  - Dissertation: *Proactive approaches for system design under uncertainty applied to network synthesis and capacity planning*.
  - Currently a Data Scientist in the Data Engineering & Analytics Department of iHeartMedia, Inc.

- Foad Mahdavi Pajouh (August 2012)
  - Dissertation: *Polyhedral combinatorics, complexity & algorithms for $k$-clubs in graphs*.
  - Currently a tenure-track Assistant Professor of Management Science and Information Systems at University of Massachusetts Boston.

### Masters Students

- Pouya Ahadi (in progress)
- Tyler Davis (Fall 2017), Thesis: *Parallelization of the Clark, Colbourn, and Johnson maximum clique algorithm for unit disk graphs*
- Rajeev Gangwar (Spring 2017)
- Sampreet Mangalvedhe (Fall 2016), Thesis: *On a biobjective flow problem in networks*
- Arun Jayaraman (Summer 2016)
- Amit Kumar (Summer 2016)
- Prashant Kalidindi Verma (Spring 2016)
- Devaraja Radha Krishnan (Fall 2015), Thesis: *Decomposition algorithms for the elementary shortest path problem in networks containing negative cycles*
- Komal Revankar (Fall 2015), Independent Study: *Autonomous mobility-on-demand: Operations Research focused literature review*
- Justin Zawoiski (Spring 2015)
- Surender Singireddy (Spring 2014), Independent Study: *Implementing shortest path, maximum flow and minimum spanning tree algorithms with boost graph libraries*
- Zhuqi Miao (Spring 2012), Independent Study: *Cluster detection in large-scale social networks using $k$-plexes*
- Juliana Bright (Fall 2011), Thesis: *Robust shortest paths under uncertainty using conditional value-at-risk*
- Ninad Joshi (Summer 2011)
- Pranav Dharmadhikari (Summer 2011)
- Vidyasagar Kodukula (Summer 2011)
- Amol Bhave (Fall 2010), Thesis: *Greedy randomized adaptive search procedure for the maximum co-$k$-plex problem*
- Ameya Dhaygude (Fall 2010), Thesis: *A heuristic approach to the chance constrained minimum spanning $k$-core problem*
- Sameer Mangalvedhe (Fall 2010), Thesis: *Greedy randomized adaptive search procedure for the maximum 2-club problem*
- Rahul Banda (Fall 2009)

- Krishna Chaitanya Gunturu (Summer 2009)

## Undergraduate Advising

### Senior Projects

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- Ahmed Almuhanna, Andrew Browning, Erica Crain, Michael Moylan (Spring 2019), *Enhancement of Inventory Simulator for Engine Parts at American Airlines Maintenance Facility*
- Ronnie Comeau, Jazmin Wilson, Qidong Zhai (Fall 2017), *An Optimized Scheduling Methodology for Air Traffic Controllers at the Federal Aviation Administration*
- Connor Mojo, Hao Pan, Carly Reeves (Spring 2016), *Improving Customer Experiences at Nebu Café*
- Andrea Lewis, Katey Luster, Weikao Wu (Spring 2014), *An Investigation into Routing Efficiency at the Regional Food Bank in Oklahoma City, Oklahoma*
- Erin Lee, Steven Miklosko, Amy Zeckser (Spring 2013), *Process Improvement in Stillwater Medical Center's Same Day Surgery Department in Stillwater, Oklahoma*
- Marco Borunda, Nadia Brigita, Bailey Layman (Fall 2009), *An Investigation of High Patient Waiting Time at the Baptist Community Clinic*
- Marcus Concienne, Mitchel McCowan, Doann Nguyen (Fall 2008), *An Investigation into the Development of a Method to Identify RFQ Similarity at Webco Industries, Inc.*

### Undergraduate Technical Papers

- Bailey Whitman, *Determining an Optimal Inventory Mix for NABco Industries*, (Project Mentor: Dr. Liu)
  - First Place, IISE South-Central Regional Undergraduate Student Paper Competition, March 2018
  - Finalist, IISE International Undergraduate Student Paper Competition, May 2018
- Andrea Lewis, Katey Luster, Weikao Wu, *Delivery Vehicle Routing at the Regional Food Bank of Oklahoma*
  - First Place, IIE South-Central Regional Undergraduate Student Paper Competition, Feb 2015
  - Finalist, IIE International Undergraduate Student Paper Competition, June 2015
  - Participant, INFORMS Undergraduate Poster Competition, Nov 2014
- Ian Giese, *Michelin Recyclable Material Planning Tool*
  - First Place, 2014 IIE Process Industry Division Student Paper Competition
- Erin Lee, *Process Improvement in Stillwater Medical Center's Same Day Surgery Department in Stillwater, Oklahoma*
  - First Place, IIE South-Central Regional Undergraduate Student Paper Competition, Feb 2014
  - Finalist, IIE International Undergraduate Student Paper Competition, June 2014
- Justin Whisenant, *Webco Industries, Inc. Steel Coil Optimization*, (Project Mentor: Dr. Ingalls)
  - Second Place, IIE South-Central Regional Undergraduate Student Paper Competition, Feb 2013
- Ajay Reddy, Ryan Sullivan, *An Analysis of Process Documentation at a Software Providing Organi-*

*zation*, (Project Mentor: Dr. Collins)
  - Participant, IIE South-Central Regional Undergraduate Student Paper Competition, Feb 2013
- Austin Buchanan, Adrian Smith, *An Investigation into Instructor Staffing at Oklahoma State University Fire Service Training*, (Project Mentor: Dr. Liu)
  - First Place, IIE South-Central Regional Undergraduate Student Paper Competition, March 2012
  - First Place, IIE International Undergraduate Student Paper Competition, May 2012
  - Participant, INFORMS Undergraduate Paper Competition, Nov 2011
- Thomas Hong, Julianna Bright, Carrie Walker, *An Investigation into the Current Distribution System at Ditch Witch in Perry, Oklahoma*, (Project Mentor: Dr. Ingalls)
  - First Place, IIE South-Central Regional Undergraduate Student Paper Competition, Feb 2010
  - First Place, IIE International Undergraduate Student Paper Competition, May 2010
- Marcus Concienne, Mitchel McCowan, *An Investigation into the Development of a Method to Identify RFQ Similarity at Webco Industries, Inc.*
  - First Place, IIE South-Central Regional Undergraduate Student Paper Competition, Feb 2009
  - Third Place, IIE International Undergraduate Student Paper Competition, May 2009

## Courses Taught

### PhD
- Linear Optimization
- Nonlinear Optimization
- Integer and Combinatorial Optimization

### MS
- Introduction to Optimization
- Network Optimization

### BS
- Operations Research
- Engineering Economic Analysis

## Editorial Service

### Associate Editor
- *SN Operations Research Forum*, 2019–Present
- *Journal of Global Optimization*, 2009–Present
- *Networks*, 2012–Present
- *IISE Transactions*, 2013–2018

### Reviewer
- *Mathematical Programming*
- *Networks*
- *Discrete Optimization*
- *Discrete Applied Mathematics*
- *Optimization Letters*
- *Journal of Global Optimization*
- *Journal of Optimization Methods & Software*
- *Annals of Operations Research*
- *Computers & Operations Research*
- *Operations Research*
- *INFORMS Journal on Computing*
- *SIAM Journal on Discrete Mathematics*
- *Journal of Graph Algorithms and Applications*
- *Journal of Combinatorial Optimization*
- *Computational Optimization & Applications*
- *Optimization and Engineering*
- *European Journal of Operational Research*
- *Asia-Pacific Journal of Operations Research*

- *IISE Transactions*
- *Production & Operations Management*
- *Discrete Event Dynamic Systems: Theory and Applications*
- *Journal of Communications & Networks*
- *IEEE/ACM Transactions on Computational Biology and Bioinformatics*
- *IEEE Transactions on NanoBioscience*
- *Computers & Industrial Engineering*
- *Journal of Heuristics*
- *Omega-The International Journal of Management Science*
- *Social Networks*
- *IEEE Transactions on Automation Science and Engineering*

## Conference Activities

### Program Committee Member

- The 9th International Conference on Optimization and Applications – OPTIMA-2018, October 1–5, 2018, Petrovac, Montenegro
- The 14th International Workshop on Global Optimization – LeGO 2018, September 18–21, 2018, Leiden, The Netherlands
- The 4th International Conference on Machine Learning, Optimization and Data Science – LOD 2018, Volterra, Tuscany, Italy, September 13–16, 2018
- Global Optimization Conference – GOC 2017, March 30–April 1, 2017, College Station, TX
- The Second International Workshop on Machine Learning, Optimization and Big Data – MOD 2016, August 26–29, 2016, Volterra, Tuscany, Italy
- International Workshop on Machine Learning, Optimization and Big Data – MOD 2015, July 21–24, 2015, Taormina - Sicily, Italy
- World Congress on Global Optimization – WCGO 2015, Feb 22-25, 2015, Gainesville, FL
- INFORMS Optimization Society Conference, March 6-8, 2014, Houston, TX
- Yalta Conference on Resilient Networks, June 17-18, 2012, Crimea, Ukraine
- Systems and Optimization Aspects of Smart Grid Challenges, April 28-30, 2011, Gainesville, FL
- Yalta Conference on Network Science, Aug 2-4, 2010, Yalta, Ukraine
- Yalta Conference on Discrete and Global Optimization, July 31–August 2, 2008, Yalta, Ukraine

### Cluster Chair

- Optimization/Networks, 2019 INFORMS ALIO International Conference, June 9–12, 2019, Cancún, Mexico
- Network Optimization in Big Data Analytics and Power Systems, 2014 INFORMS Optimization Society Conference, March 6-8, 2014, Houston, TX
- Optimization/Networks, 2013 INFORMS Annual Meeting, Oct 6–9, 2013, Minneapolis, MN
- Optimization/Networks, 2012 INFORMS Annual Meeting, Oct 14–17, 2012, Phoenix, AZ

### Session Chair

- Network Optimization-I, 2019 INFORMS ALIO International Conference, June 9–12, 2019, Cancún, Mexico
- Optimization in Social Networks, 2018 INFORMS Annual Meeting, Nov 4–7, 2018, Phoenix, AZ
- Global Optimization in Networks, 2017 Global Optimization Conference – GOC 2017, March 30–April 1, 2017, College Station, TX
- Paths, Cycles, and Transversals, 2016 INFORMS Annual Meeting, Nov 13–16, 2016, Nashville, TN
- Stable Sets, Zero-forcing Sets, and Target Sets in Graphs, 2016 INFORMS Annual Meeting, Nov 13–16, 2016, Nashville, TN
- Network Flows and Combinatorial Optimization, 2015 INFORMS Annual Meeting, Nov 1–4, 2015, Philadelphia, PA
- Combinatorial Optimization in Social Networks, 22nd International Symposium on Mathematical Programming, July 12–17, 2015, Pittsburgh, PA
- Optimization in Graphs and Digraphs, 2014 INFORMS Annual Meeting, Nov 9–12, 2014, San Francisco, CA
- CVaR and Chance Constrained Optimization in Networks, 2012 INFORMS Annual Meeting, Oct 14–17, 2012, Phoenix, AZ
- Optimization Methodology, 2009 Industrial Engineering Research Conference (IERC), May 30–June 3, 2009, Miami, FL
- Internet Analytics and Automation, 2008 IEEE Conference on Automation Science and Engineering, Aug 23–26, 2008, Washington, DC
- Discrete Optimization, 2008 INFORMS Southwest Regional Conference, April 18–19, 2008, Texas A&M University, College Station, TX

## Other Service Activities

- *Affiliate Faculty*, Center for the Study of Disasters and Extreme Events (CSDEE), Oklahoma State University, since 2016
- *Member*, Coalition for Advanced Digital Research & Education (CADRE) Council, Oklahoma State University, 2017–2019
- *Member*, Food-Energy-Water (FEW) Nexus Council, Oklahoma State University, College of Engineering, Architecture, and Technology representative, 2016–2018
- *Member*, Faculty Research Council, College of Engineering, Architecture, and Technology, School of Industrial Engineering & Management representative, 2013–2015
- *Faculty Adviser*, Student Chapter of IIE at Oklahoma State University, 2007–2014
- *Panelist,* "Four Generations in Academia." Graduate Students & Faculty Relationships Workshop,

April 4–6, 2014, Texas A&M University, College Station, TX

- *Panelist*, INFORMS Best Student Poster Competition (2017, 2018), INFORMS George Nicholson Prize Committee (2015, 2016), INFORMS Junior Faculty Interest Group Paper Competition (2014)
- *Proposal Review*: Department of Energy, National Science Foundation, Air Force Office of Scientific Research
- Advisory Board Member of iCREST: Interdisciplinary Center for Research Excellence in Science and Technology (Bioinformatics and Computational Biology), 2011–2014
- Elected *Vice Chair for Networks*, INFORMS Optimization Society, 2011–2013
- *Mentor,* Oklahoma Louis Stokes Alliance for Minority Participation, 2008-2009, 2017

## Professional Memberships

- Institute for Operations Research and the Management Sciences (INFORMS)
- Mathematical Optimization Society (MOS)
- Institute of Industrial and Systems Engineers (IISE)
- Society for Industrial and Applied Mathematics (SIAM)

## Selected Presentations

- "Robust low-diameter subgraphs." 2019 INFORMS ALIO International Conference, June 9–12, 2019, Cancún, Mexico.
- "An upper-bounding technique for the maximum quasi-clique problem." 2018 INFORMS Optimization Society Meeting, March 23–25, 2018, Denver, CO.
- "A lazy approach to finding low-diameter clusters in graphs." Seminar Series, Department of Industrial and Manufacturing Systems Engineering, February 7, 2018, Kansas State University, Manhattan KS.
- "The maximum quasi-clique problem." 2017 Global Optimization Conference – GOC 2017, March 30–April 1, 2017, College Station, TX.
- "Recent developments in detecting low-diameter clusters in graphs." Seminar Series, Department of Industrial Engineering, October 6, 2016, University of Pittsburgh, Pittsburgh, PA.
- "Cliques & clubs." Seminar Series, Department of Industrial & Systems Engineering, September 11, 2015, Texas A&M University, College Station, TX.
- "On the 2-club polytope of graphs." 22nd International Symposium on Mathematical Programming (ISMP), July 12–17, 2015, Pittsburgh, PA.
- "The maximum $k$-club problem." 2012 INFORMS Optimization Society Meeting, Feb 24–26, 2012, University of Miami, School of Business Administration, Coral Gables, FL.
- "Detecting low-diameter clusters in graphs." Colloquium/Special Lectures Series, Department of Computational and Applied Mathematics, Nov 28, 2011, Rice University, Houston, TX.