Hamidreza Validi

Curriculum Vitae

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AFFILIATION

Fall 2022 -	**Assistant Professor** Industrial, Manufacturing, and Systems Engineering Texas Tech University, Lubbock, TX
2020 - 2022	**Postdoctoral Research Associate** Computational Applied Mathematics and Operations Research Rice University, Houston, TX

EDUCATION

2016 - 2020	**Doctor of Philosophy, Industrial Engineering & Management** Oklahoma State University, Stillwater, OK
2012 - 2014	**Master of Science, Industrial Engineering** Sharif University of Technology, Tehran, Iran
2007 - 2012	**Bachelor of Science, Industrial Engineering** Ferdowsi University of Mashhad, Mashhad, Iran

SUPPLEMENTAL

June & July 2019	**Summer Fellow, Voting Rights Data Institute** MIT & Tufts, MA

PUBLICATIONS

REFEREED JOURNAL PAPERS (*: MENTEE)

1. *J. Zhang, **H. Validi**, A. Buchanan, I. V. Hicks. Linear-size formulations for connected planar graph partitioning and political districting. To appear at *Optimization Letters*, September 2023.

2. *R. Cacao, *L. Cortez, *J. Forner, **H. Validi**, I. R. de Farias, I. V. Hicks. The set partitioning problem in a quantum context. To appear at *Optimization Letters*, June 2023.

3. *R. Fakhimi, **H. Validi**, I. V. Hicks, T. Terlaky, L. Zuluaga. On relaxations of the max k-cut problem formulations. *Operations Research Letters*, 51.5: 521-527, 2023.

4. **H. Validi**, A. Buchanan. Political districting to minimize cut edges. *Mathematical Programming Computation*, 14: 623-672, 2022.

5. **H. Validi**, A. Buchanan, E. Lykhovyd. Imposing contiguity constraints in political districting models. *Operations Research*, 70(2): 867-892, 2022. (**Winner of the 2021 ICS Harvey J. Greenberg Research Award**)

6. **H. Validi**, A. Buchanan. The optimal design of low-latency virtual backbones. *INFORMS Journal on Computing*, 32(4): 952-967, 2020.

7. **H. Validi**, A. Buchanan. A note on "A linear-size zero-one programming model for the minimum spanning tree problem in planar graphs". *Networks*, 73(1): 135-142, 2019.

BOOK CHAPTERS (*: MENTEE)

◇ *R. Fakhimi, **H. Validi**. Quantum Approximate Optimization Algorithm (QAOA). Accepted for *Encyclopedia of Optimization*, March 2023.

PAPERS UNDER REVIEW (*: MENTEE)

1. *B. Alston, **H. Validi**, I. V. Hicks. Mixed integer linear optimization formulations for learning optimal binary classification trees. Revision submitted to *INFORMS Journal on Computing*, October 2023.

2. *S. Kroger, **H. Validi**, I. V. Hicks. A polytime preprocess algorithm for the maximum independent set problem. Revision submitted to *Optimization Letters*, October 2023.

3. *F. Khoshbakhtian, **H. Validi**, M. Ventresca, D. Aleman. Optimal design of vaccination policies: A case study for Newfoundland and Labrador. Major revision at *Operations Research Letters*, October 2023.

4. *S. Kroger, **H. Validi**, I. V. Hicks. Maximizing resilience in large-scale social networks.

5. *A. Karagoz, *R. Liu, **H. Validi**, A. J. Schaefer. Strengthened MIP formulations for the liver region redesign models of Akshat et al.

Ph.D. Students

◇ Ali Azizi   Texas Tech University (Fall 2023)

◇ Marziehsadat Rezaei   Texas Tech University (Fall 2022 – present)

◇ Sepideh Mohammadi   Texas Tech University (Fall 2022 – present)

Undergraduate Student

◇ Lucas Silveira   Texas Tech University (Fall 2022 - present)

◇ Bruno Burin   Texas Tech University (Fall 2023 - present)

Mentees

◇ Charlie Liu   Undergraduate student at Rice University (Spring 2023 – present)

◇ Aysenur Karagoz   PhD student at Rice University (Spring 2022 – present)

◇ Samuel Kroger   PhD student at Rice University (Fall 2020 – present)

◇ Ramin Fakhimi   PhD candidate at Lehigh University (Fall 2020 – Spring 2023)

◇ Rafael Cacao   PhD candidate at Texas Tech University (Spring 2022 – Spring 2023)

◇ Lucas Cortez   PhD candidate at Texas Tech University (Spring 2022 – Spring 2023)

◇ Jackson Forner   PhD student at Rice University (Spring 2022 – Fall 2023)

◇ Jack Zhang   Undergraduate student at Rice University (Fall 2021 – present)

◇ Brandon Alston   PhD student at Rice University (Fall 2020 – Summer 2022)

◇ Faraz Khoshbakhtian   PhD student at University of Toronto (Spring 2022 – Summer 2023)

◇ Elizabeth Bunting   Undergraduate student at Oklahoma State University (Fall 2018 – Spring 2019)
                                    Project: *Optimizing the compactness of political districts in Oklahoma*

Teaching

GRADUATE TEACHING

⬦ Mixed Integer Programming (PhD course, full responsibility), Texas Tech University, Fall 2023

⬦ Principles of Operations Research (MS & PhD course, full responsibility), Texas Tech University, Fall 2023

⬦ Network Optimization (PhD course, full responsibility), Texas Tech University, Spring 2023

⬦ Graph Theory (PhD course, full responsibility), Rice University, Spring 2022.

⬦ Computational Prescriptive Analytics (MS course, Guest lecturer), Computational and Applied Mathematics, Rice University, Spring 2021.

⬦ Analysis 1 (PhD course, full responsibility), Computational and Applied Mathematics, Rice University, Fall 2020.

UNDERGRADUATE TEACHING

⬦ Deterministic Operations Research (full responsibility), Texas Tech University, Fall 2023.

⬦ Computing for Industrial Engineers (full responsibility), Texas Tech University, Fall 2022.

⬦ Graph Theory (full responsibility), Rice University, Spring 2022.

⬦ Probability and Statistics for Engineers 1 (full responsibility), Oklahoma State University, Fall 2019.

⬦ Probability and Statistics for Engineers 1 (full responsibility), Oklahoma State University, Fall 2018.

SELECTED AWARDS & SCHOLARSHIPS

⬦ Recipient, **2023 INFORMS Best Dissertation Award in the Telecommunication and Network Analytics section**, October 2023.

⬦ Recipient, **2021 INFORMS Computing Society Harvey J. Greenberg Research Award**, August 2021.

⬦ Recipient, **2020 Outstanding Graduate Student Award**, College of Engineering, Architecture, and Technology, Oklahoma State University, May 2020.

⬦ Recipient, **Spring 2020 Honorary Graduate Commencement Marshal**, Oklahoma State University, April 2020.

⬦ Recipient, **Distinguished Graduate Fellowship 2019-2020**, Oklahoma State University, August 2019.

⬦ Poster finalist, **Mixed Integer Programming Workshop 2019**, MIT, MA, July 2019.

⬦ Recipient, **2019-2020 John L. Imhoff Scholarship**, awarded by Institute of Industrial and Systems Engineers.

⬦ Recipient, **2019 Phoenix Award for Outstanding Graduate Teaching Assistant**, awarded by Graduate and Professional Student Government Association at Oklahoma State University, April 2019.

⬦ Recipient, **2018-2019 E.J. Sierleja Memorial Fellowship**, awarded by Institute of Industrial and Systems Engineers.

⬦ Recipient, **NSF travel grant to attend Mixed Integer Programming Workshop 2018**, Greenville, SC, April 2018.

⬦ Sixth place of **M.Sc. National Entrance Exam** among 8,862 participants, Iran, August 2012.

⬦ Recipient, **Best Researchers Award** at Ferdowsi University of Mashhad, Iran, December 2012.

⋄ Recipient, **Best Researchers Award** at Ferdowsi University of Mashhad, Iran, December 2011.

⋄ First place for **Manufacturing Firm Design Competition** at Ferdowsi University of Mashhad, Iran, March 2011.

CONFERENCE PRESENTATIONS/INVITED TALKS

⋄ On relaxations of the max k-cut problem formulations.

     ○ 2023 INFORMS Annual Meeting, Phoenix, AZ, October 2023.

⋄ MIP formulations for partitioning a graph into low-diameter clusters.

     ○ 2022 INFORMS Annual Meeting, Indianapolis, Indiana, October 17, 2022.
     ○ 2021 INFORMS Annual Meeting, Anaheim, CA, October 26, 2021.

⋄ Formulations of the max k-cut problem on classical and quantum computers.

     ○ Department of Industrial and Systems Engineering, University of Florida, March 17, 2022.
     ○ 2022 INFORMS Optimization Society, Greenville, SC, March 13, 2022.

⋄ Mixed integer programming in the era of quantum computing and machine learning. CAAM Colloquium, Department of Computational and Applied Math, Rice University, November 29, 2021.

⋄ The Bin Packing Problem: Skip Branches of the B&B Tree with SCIP. 17th Iranian International Industrial Engineering Conference, February 4, 2021 (in Persian).

⋄ Polyhedral study of k connected components. 2020 INFORMS Annual Meeting, November 9, 2020.

⋄ Imposing contiguity constraints in political districting models.

     ○ 2020 INFORMS Annual Meeting, November 10, 2020.
     ○ CAAM Colloquium, Department of Computational and Applied Math, Rice University, October 12, 2020.
     ○ Mixed Integer Programming Workshop 2020, May 18, 2020. (Poster presentation)
     ○ GAMMA Seminar, Department of Industrial and Systems Engineering, University at Buffalo, Buffalo, NY, March 26, 2020.
     ○ 2019 INFORMS Annual Meeting, Seattle, WA, October 20-23, 2019.
     ○ Seminar Series, School of Industrial Engineering & Management, Oklahoma State University, Stillwater, OK, October 16, 2019.
     ○ Voting Rights Data Institute 2019, Tufts University, MA, July 17, 2019.
     ○ Mixed Integer Programming Workshop 2019, MIT, MA, July 15, 2019. (Poster presentation)

⋄ A note on "A linear-size zero-one programming model for the minimum spanning tree problem in planar graphs".

     ○ 2018 INFORMS Annual Meeting, Phoenix, AZ, November 6, 2018.
     ○ Mixed Integer Programming Workshop 2018, Greenville, SC, June 18, 2018. (Poster presentation)

⋄ The optimal design of low-latency virtual backbones.

     ○ ACM International Workshop on Critical Infrastructure Network Security, June 14, 2021.
     ○ 2018 INFORMS Optimization Society, Denver, CO, March 23, 2018.
     ○ 2017 INFORMS Annual Meeting, Houston, TX, October 22, 2017.

PROFESSIONAL EXTERNAL SERVICE

⬦ Journal and Conference Referee

- *Operations Research*
- *INFORMS Journal on Computing*
- *INFORMS Journal on Applied Analytics*
- *Networks*
- *Discrete Applied Mathematics*
- *Optimization Letters*
- *Journal of Global Optimization*
- *IISE Transactions*
- *Naval Research Logistics*
- *European Journal of Operational Research*
- *IPCO 2023*
- *Theoretical Computer Science*
- *Political Research Quarterly*
- *IEEE/ACM Transactions on Networking*
- *Annals of Operations Research*
- *Socio-Economic Planning Sciences*

⬦ Member of INFORMS Meetings Committee, January 2022- present.

⬦ Member of Council, INFORMS Section on Telecommunications and Network Analytics, 2022–present.

⬦ Cluster Chair, Telecommunications & Network Analytics: INFORMS 2022, INFORMS 2023.

⬦ Poster Referee, INFORMS Annual Meeting 2023.

⬦ Session Chair: INFORMS Annual Meeting (2018, 2019, 2020, 2021, 2022), IOS 2022.

⬦ Committee member of Ph.D. student Samuel Kroger at Rice University, Fall 2023.

PROFESSIONAL INTERNAL SERVICE

⬦ Member of the graduate committee, Texas Tech University, Fall 2023-present.

⬦ Graduate seminar coordinator, Texas Tech University, Fall 2023-present.

⬦ Committee member of Ph.D. students at Texas Tech University: Rafael Cacao (2023), Andrea Arriet (2023), Henry Johnston.

⬦ President of INFORMS Student Chapter, Oklahoma State University, Fall 2018.

⬦ Graduate Vice President of INFORMS Student Chapter, Oklahoma State University, Spring 2018.