

Contact Information	5500 Wabash Avenue Terre Haute, IN 47803	813-410-1021 luddenig@rose-hulman.edu
Education	University of Illinois Urbana-Champaign (Illinois) , Urbana, IL – Ph.D., Computer Science Advisor: Sheldon H. Jacobson Thesis: “Graph Partitioning: Redistricting Games & the Spherical Zoning Problem” Rose-Hulman Institute of Technology (RHIT) , Terre Haute, IN – B.S., Computer Engineering & Mathematics	Aug 2023 Nov 2016
Experience	Rose-Hulman Institute of Technology (RHIT) , Terre Haute, IN – Assistant Professor of Computer Science and Software Engineering	Aug 2023 – Present
Honors	NSF Graduate Research Fellow Outstanding Teaching Assistant–Lifetime , Illinois CS Finalist – <i>Research Live!</i> , Illinois Graduate College Graduate Teacher Certificate , Illinois CITL Mavis Future Faculty Fellow , Grainger College of Engineering Outstanding Teaching Assistant , Illinois CS Saburo Muroga Endowed Fellowship , Illinois CS	2019–2023 Spring 2022 Spring 2022 Spring 2021 2020–2021 Fall 2019 2017–2018
Teaching	Rose-Hulman Institute of Technology – CSSE/MA 490 (Special Topics): Algorithmic Game Theory – CSSE/MA 473: Design and Analysis of Algorithms – CSSE/MA 473: Design and Analysis of Algorithms – CSSE 220: Object-Oriented Software Development – CSSE/MA 474: Theory of Computation – CSSE/MA 474: Theory of Computation – CSSE 220: Object-Oriented Software Development Instructor of Record, Illinois CS – CS 173: Discrete Structures (Section AL1, asynchronous online) Teaching Assistant, Illinois CS – CS 482/IE 413: Simulation – CS 482/IE 413: Simulation ★ CS 374: Algorithms & Models of Computation – CS 482/IE 413: Simulation – CS 481/IE 410: Stochastic Processes ★ CS 173: Discrete Structures ★ CS 173: Discrete Structures Course Aide, Grainger College of Engineering – ENG 598 TL: Teaching and Leadership ★ — Recognized in the CITL List of Teachers Ranked as Excellent	Spring 2025 Spring 2025 Winter 2024–25 Fall 2024 Spring 2024 Winter 2023–24 Fall 2023 Summer 2020 Spring 2021 Spring 2020 Fall 2019 Spring 2019 Fall 2018 Spring 2018 Fall 2017 Fall 2019 – Spring 2023
Service	Student Affairs Committee, RHIT – Review applications for new student organizations and provide feedback	Sep 2024 – Present

- Integrity Committee, RHIT CSSE Sep 2024 – Present
- Review academic misconduct allegations and provide recommendations
 - Develop departmental policies for defining and investigating misconduct
- Freshman Mentoring Committee, RHIT CSSE Aug 2024 – Present
- Facilitate peer mentoring within our department through large-group events and one-on-one mentoring pairs
- Process Committee, RHIT CSSE Aug 2024 – Present
- Refine continuous improvement process for ABET accreditation
 - Review assessment rubrics for clarity and consistency
- Social Media + Newsletter Committee, RHIT CSSE Sep 2023 – Present
- Collaborate with other committee members to write, edit, and distribute monthly Student Spotlight newsletter
- Session Facilitator for RHIT August Teaching Workshop Aug 2024
- Plan & facilitate “Classroom Assessment” session for new/returning faculty
- Application Reviewer for [Noblitt Scholars Program](#) Jan 2024
- Review eight applicant videos and materials as part of the selection process
- [Grad Fellow, CRA-E Committee](#) June 2020 – June 2022
- Manage, write, and edit [Undergraduate Research Highlights](#) for CRA-E website
 - Plan and deliver webinar for undergraduates considering a PhD in CS
 - Provide graduate student perspective on CRA-E activities during annual meeting
- [Community Computer Lab Volunteer, Salt & Light](#) July 2021 – Mar 2023
- Supervise public computer lab of not-for-profit grocery and thrift store
 - Develop and deliver training program for [REcompute](#) refurbished laptop recipients
- [Grad Academy for College Teaching](#) Volunteer, Illinois CITL Fall 2018 – Spring 2023
- Facilitate pre-semester small-group session for new CS teaching assistants
- Journal reviewing 2019 – Present
- *The American Statistician*
 - *Computational Optimization and Applications*
 - *Computers and Operations Research*
 - *Discrete Optimization*
 - *Journal of Air Transport Management*
 - *Journal of Computational Social Science*
 - *Journal of Quantitative Analysis in Sports*
 - *Operations Research*
 - *Optimization Letters*
 - *Networks*

Peer-reviewed
Journal Papers

1. Dobbs, K.W., D.M. King, **I.G. Ludden**, and S.H. Jacobson (2024). “Facilitating Compromise in Redistricting with Transfer Distance Midpoints.” *INFORMS Journal on Optimization*, 0(0). DOI: [10.1287/ijoo.2023.0029](#).
2. Swamy, R., D.M. King, **I.G. Ludden**, K.W. Dobbs, and S.H. Jacobson (2024). “A practical optimization framework for political redistricting: A case study in Arizona.” *Socio-Economic Planning Sciences*, 92. DOI: [10.1016/j.seps.2024.101836](#).
3. Dobbs, K.W., R. Swamy, D.M. King, **I.G. Ludden**, and S.H. Jacobson (2024). “An Optimization Case Study in Analyzing Missouri Redistricting.” *INFORMS Journal on Applied Analytics*, 54(2):162-187. DOI: [10.1287/inte.2022.0037](#).

	4. Ludden, I.G., D.M. King, and S.H. Jacobson (2023). "3D geo-graphs: Efficient flip verification for the spherical zoning problem." <i>Discrete Applied Mathematics</i>, 338:329-346. DOI: 10.1016/j.dam.2023.07.004. 5. Ludden, I.G., R. Swamy, D.M. King, and S.H. Jacobson (2023). "A Bisection Protocol for Political Redistricting." <i>INFORMS Journal on Optimization</i>, 5(3):233-255. DOI: 10.1287/ijoo.2022.0084. 6. Ludden, I.G., S.H. Jacobson, and J.A. Jokela (2022). "Excess Deaths by Sex and Age Group in the First Two Years of the COVID-19 Pandemic in the United States." <i>Health Care Management Science</i>. DOI: 10.1007/s10729-022-09606-3. 7. Pavlik, J.A., I.G. Ludden, and S.H. Jacobson (2021). "SARS-CoV-2 aerosol risk models for the Airplane Seating Assignment Problem." <i>J Air Trans Mgmt</i>, 99. DOI: 10.1016/j.jairtraman.2021.102175. 8. Pavlik, J.A., I.G. Ludden, S.H. Jacobson, and E.C. Sewell (2021). "Airplane Seating Assignment Problem." <i>Service Science</i>, 13(1):1-52. DOI: 10.1287/serv.2021.0269. 9. Ludden, I.G., A. Khatibi, D.M. King, and S.H. Jacobson (2020). "Models for Generating NCAA Men's Basketball Tournament Bracket Pools." <i>JQAS</i>, 16(1):1-15. DOI: 10.1515/jqas-2019-0022.	
Peer-reviewed Conf. Papers	10. Deshpande, S.P., I.G. Ludden , and S.H. Jacobson (2023). "Votemandering: Strategies and Fairness in Political Redistricting." <i>Third ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO'23)</i> .	
Presentations	Franciscan University of Steubenville STEM Seminar (invited talk) Mar 2025 – "Algorithms, Incentives, and Autonomy: Improving Fairness while Respecting Free Will" INFORMS Optimization Society Conference (IOS) Mar 2024 – Session SunB3 – Topics in mixed integer programming – "A Bilevel Mixed-Integer Program for the Define-Combine Redistricting Procedure" Wabash College Math/CS Colloquium Oct 2023 – "Connected Recursive Bisection and Perfect Hierarchical Matchings" INFORMS Annual Meeting Oct 2022 – Session TD09 – PSOR Flash Session – "A Bilevel Define-Combine Formulation with Applications to Political Redistricting" INFORMS Computing Society Conference (ICS) Jan 2022 – Session MB4 – Network Applications – "Analyzing and Modeling the Define-Combine Procedure for Political Redistricting" INFORMS Annual Meeting Oct 2021 – Chair: Session WE25 – Combinatorial Optimization – "3-D Geo-graphs: Efficient Flip Verification for 3-D Graph Partitioning" INFORMS Annual Meeting Oct 2019 – Session WC43 – Political Redistricting – "A Bisection Protocol for Political Redistricting"	
Mentoring	Daniel Leverett (RHIT) Dec 2023 – Present – Rose Research Fellow project on social deduction games	

	Akaash Kolachina and Kylie Zhang (UIUC) – PURE Program project on redistricting visualization	Fall 2020
Outreach	Volunteer Judge for St. Patrick School Science Fair Python Instructor for Connecting With Code 2024	Jan 2025 Summer 2024
Consulting	Project PRE.CISE – Organize eight-week program (workshops, panels) for NSF REU Supplement students – Objectives: build community; inform students of grad school and research careers – Collaboration between CRA-E , CERP , and NSF CISE directorate	Summer 2021
Industry Experience	Software Engineer, PilotFish Technology (Tampa, FL) – Integration platform development (Java, XML/XPath) Computer Science Intern, LGS Innovations (Tampa, FL) – Communication system modeling (MATLAB) Software Engineer Intern, Garmin Intl. (Olathe, KS) – Embedded development for GPS fitness watches (C) Programming Intern, FitzMark, Inc. (Indianapolis, IN) – Dispatch application development	Jan–Aug 2017 Summer 2016 Summer 2015 Summer 2014