COLLEEN ROBICHAUX

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RESEARCH INTERESTS

Algebraic combinatorics, Schubert calculus, computational complexity

EMPLOYMENT

Assistant Professor, UC Davis, July 2026–

NSF Mathematical Sciences Postdoctoral Research Fellow, University of California, Los Angeles (UCLA), July 2023– June 2026
Sponsoring Scientist: Igor Pak

Hedrick Assistant Math Fellow, UCLA, February 2026–June 2026
Mentors: Igor Pak

Hedrick Assistant Adjunct Professor, UCLA, July 2022–January 2026
Mentors: Igor Pak and Pavel Galashin

Chancellor's Postdoctoral Fellow, UCLA, July 2023–June 2024
Supervisor: Igor Pak

EDUCATION

Ph.D. Mathematics, University of Illinois at Urbana-Champaign (UIUC), August 2022
Advisor: Alexander Yong

M.S. Mathematics, UIUC, May 2018

B.S. Mathematics, Secondary Education concentration, Louisiana State University (LSU), May 2016

HONORS

NSF Mathematical Sciences Postdoctoral Research Fellow, (2023–2026), grant no. DMS-2302279

Chancellor's Postdoctoral Fellow at UCLA, (2023–2024)

NSF Graduate Research Fellowship, (2018–2022), grant no. DGE 1746047

Irving Reiner Memorial Award, UIUC Ph.D. student(s) with outstanding achievement in algebra (2020)

GAANN Fellow, U.S. Department of Education's Graduate Assistance in Areas of National Need program (2016–2017)

University Medalist, LSU undergraduates graduating with GPA ≥ 4.0 (2016)

Astronaut Scholar, one of two, selected among high-achieving LSU STEM undergraduates (2015–2016)

PUBLICATIONS AND PREPRINTS

1. (with Megumi Harada and Martha Precup) Dimensions of type A Hessenberg varieties over a fixed sheet, preprint, arXiv:2608.25205, (2026), 28pp.
2. (with Igor Pak) Saturation property fails for Schubert coefficients, preprint, arXiv:2601.04182, (2026), 13pp, to appear in *Proceedings of the American Mathematical Society*.
3. A counterexample to the Ross–Yong conjecture for Grothendieck polynomials, *European Journal of Combinatorics*, Vol. 131 (2026), no. 104241, 13pp.
4. (with Igor Pak) Vanishing of Schubert coefficients in probabilistic polynomial time, preprint, arXiv:2509.16467, (2025), 15pp.
5. (with Igor Pak and Weihong Xu) On Vanishing of Gromov–Witten invariants, preprint, arXiv: 2508.15715, (2025), 11pp.
6. (with Igor Pak) Signed puzzles for Schubert coefficients, preprint, arXiv: 2504.17734, (2025), 15pp, to appear in *Algebraic Combinatorics*.
7. (with Igor Pak) Vanishing of Schubert coefficients via the effective Hilbert nullstellensatz, *Forum of Mathematics, Sigma*, Vol. 13 (2025), 19pp.
8. (with Igor Pak) Vanishing of Schubert coefficients, STOC '25: Proceedings of the 57th Annual ACM Symposium on Theory of Computing, (2025), 12pp. See extended version at arXiv: 2412.02064, 24pp.
9. (with Igor Pak) Signed combinatorial interpretations in algebraic combinatorics, *Algebraic Combinatorics*, Vol. 8 (2025) no. 2, 26pp.
10. (with Igor Pak) Positivity of Schubert coefficients, *Comptes Rendus Mathématique*, Volume 363 (2025), pp. 1507–1515.
11. Castelnuovo–Mumford regularity for 321-avoiding Kazhdan–Lusztig varieties, preprint, arXiv: 2308.14208, (2023), 25pp.
12. (with Jenna Rajchgot, Anna Weigandt) Castelnuovo–Mumford regularity of ladder determinantal varieties and patches of Grassmannian Schubert varieties, *Journal of Algebra*, Vol. 617 (2023), 160–191.
13. (with Harshit Yadav, Alexander Yong) Equivariant cohomology, Schubert calculus, and edge labeled tableaux, in *Facets of Algebraic Geometry: A Volume in Honour of William Fulton's 80th Birthday*, Vol. 2, Cambridge University Press, London Mathematical Society Lecture Note Series, (2022) 284–335.
14. (with Anshul Adve, Alexander Yong) An efficient algorithm for deciding vanishing of Schubert polynomial coefficients, *Advances in Mathematics*, Vol. 383 (2021).
15. (with Jenna Rajchgot, Yi Ren, Avery St. Dizier, Anna Weigandt) Degrees of symmetric Grothendieck polynomials and Castelnuovo–Mumford regularity, *Proceedings of the American Mathematical Society*, 149 (2021) no. 4, 1405–1416.
16. Shifted edge labeled tableaux and localizations, preprint, arXiv:2111.02971, (2021), 10pp.
17. (with Harshit Yadav, Alexander Yong) The A·B·C·Ds of Schubert calculus, *Séminaire Lotharingien de Combinatoire* B85a (2020), 12 pp.
18. (with Anshul Adve, Alexander Yong) Vanishing of Littlewood-Richardson polynomials is in P, *Computational Complexity*, Vol. 28(2) (2019), 241–257.
19. (with Christian Gaetz, Michelle Mastrianni, Rebecca Patrias, Hailee Peck, David Schwein, Ka Yu Tam) K-Knuth Equivalence for Increasing Tableaux, *Electronic Journal of Combinatorics*, Vol. 23(1) (2016), P1.40.

SEMINAR AND CONFERENCE TALKS

- Vanishing of Schubert coefficients in probabilistic polynomial time. Formal Power Series and Algebraic Combinatorics (FPSAC) 2026, Contributed Talk, University of Washington, Seattle, Washington. (July 16, 2026)
- Deciding Schubert Positivity. Invited Speaker, CMND 2026 Thematic Program: Algebraic Combinatorics and Applications, International Conference Week, Center for Mathematics at the University of Notre Dame, South Bend, IN. (July 6, 2026)
- Deciding Schubert Positivity. New Perspectives in Algebraic Combinatorics, SIAM Conference on Discrete Mathematics 2026. (June 22, 2026)
- Deciding Schubert Positivity. Invited Speaker, AlCoVE 2026. (June 9, 2026)
- Polynomial Identity Testing in Combinatorics. UCLA Combinatorics Seminar, University of California, Los Angeles, Los Angeles, CA. (May 28, 2026)
- Deciding Schubert Positivity. Colloquium, McMaster University, Hamilton, ON, Canada. (February 13, 2026)
- Positivity of Schubert coefficients. Combinatorial Algebra meets Algebraic Combinatorics (CAAC) 2026, Dalhousie University, Halifax, NS, Canada. (January 24, 2026)
- Deciding Schubert Positivity. Colloquium, University of California, Davis, Zoom.(December 16, 2025)
- Deciding Schubert Positivity. Colloquium, University of Colorado Boulder, Boulder, CO. (December 10, 2025)
- Deciding Schubert Positivity. Colloquium, Texas A&M University, College Station, TX. (December 2, 2025)
- Deciding Schubert Positivity. Colloquium, Queen's University, Kingston, ON, Canada. (November 28, 2025)
- Deciding Schubert Positivity. Colloquium, Louisiana State University, Baton Rouge, LA. (November 21, 2025)
- Deciding Schubert Positivity. Colloquium, Vanderbilt University, Nashville, TN. (November 18, 2025)
- Positivity of Schubert coefficients. Algebra and Discrete Mathematics Seminar, University of California, Davis, Davis, CA. (October 27, 2025)
- Positivity of Schubert coefficients. Combinatorics and Probability Seminar, University of California, Irvine, Irvine, CA. (October 9, 2025)
- Positivity of Schubert coefficients. Combinatorics Seminar, University of Southern California, Los Angeles, CA. (September 15, 2025)
- Signed combinatorial interpretations in algebraic combinatorics. Formal Power Series and Algebraic Combinatorics (FPSAC) 2025, Contributed Talk, Hokkaido University, Sapporo, Hokkaido, Japan. (July 21, 2025)
- Vanishing of Schubert coefficients. 57th Annual ACM Symposium on Theory of Computing (STOC), Contributed Talk, Prague, Czech Republic. (June 25, 2025)
- Positivity of Schubert coefficients. Nonlinear Algebra Seminar, Max Plank Institute for Mathematics in the Sciences, Leipzig, Germany. (June 19, 2025)

- Signed puzzles for Schubert coefficients. CMS Summer Meeting, Combinatoire algébrique et énumérative, Université Laval, Quebec City, Quebec, Canada. (June 8, 2025)
- Positivity of Schubert coefficients. Spring Western Sectional Meeting, Special Session on Algebraic and Geometric Combinatorics, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA. (May 3, 2025)
- Positivity of Schubert coefficients. ALGECOM XXV Plenary Talk, University of Minnesota, Minneapolis, MN. (April 5, 2025)
- Positivity of Schubert coefficients. Spring Central Sectional Meeting, Special Session on Combinatorics and Lie Theory, University of Kansas, Lawrence, KS. (March 29, 2025)
- Positivity of Schubert coefficients. Combinatorics Seminar, University of Toronto, Toronto, ON, Canada. (March 13, 2025)
- Hilbert Nullstellensatz and the Positivity of Schubert coefficients. Women in Commutative Algebra Conference, Contributed Talk, Fields Institute, Toronto, ON, Canada. (March 13, 2025)
- Positivity of Schubert coefficients. Algebra and Combinatorics Seminar, Texas A&M University, College Station, TX. (February 28, 2025)
- Deciding Schubert Positivity. IPAM Workshop: Computational Interactions between Algebra, Combinatorics, and Discrete Geometry, Invited talk. (February 12, 2025).
- Positivity of Schubert coefficients. Combinatorics Seminar, Dartmouth University, Hanover, NH. (January 30, 2025)
- Positivity of Schubert coefficients. Richard P. Stanley Seminar in Combinatorics, Harvard University, Cambridge, MA. (January 29, 2025)
- Positivity of Schubert coefficients. Combinatorics Seminar, Brown University, Providence, RI. (January 27, 2025)
- Positivity of Schubert coefficients. Combinatorics, Algebra, and Geometry Seminar, Drexel University, Philadelphia, PA. (January 23, 2025)
- Vanishing of Schubert coefficients. Algebraic and enumerative combinatorics seminar, University of Waterloo, Waterloo, ON, Canada. (November 14, 2024)
- Exploring Kohnert's rule for Grothendieck polynomials. Combinatorics Seminar, University of Southern California, Los Angeles, CA. (September 9, 2024)
- Exploring Kohnert's rule for Grothendieck polynomials. Combinatorics Seminar, University of California, San Diego, San Diego, CA. (April 23, 2024)
- Castelnuovo–Mumford regularity and excited Young diagrams. Combinatorics and Graph Theory Seminar, Michigan State University, Zoom. (January 31, 2024)
- Castelnuovo–Mumford regularity and excited Young diagrams. Combinatorics Seminar, University of California, Berkeley, Berkeley, CA. (November 14, 2023)
- Degrees of Grothendieck Polynomials and CM Regularity. Southern California Discrete Mathematics Symposium 2023 Contributed Talk, California State University, Los Angeles, Los Angeles, CA. (November 5, 2023)
- Castelnuovo–Mumford regularity and Kazhdan–Lusztig varieties. 2023 Schubert Summer School at UIUC, Invited talk, University of Illinois at Urbana-Champaign, Urbana, IL. (June 20, 2023)

- Degrees of Grothendieck Polynomials and CM Regularity. Spring Western Sectional Meeting, Special Session on Combinatorics and Representation Theory, California State University, Fresno, Fresno, CA. (May 6, 2023)
- Degrees of Grothendieck Polynomials and CM Regularity. Women in Algebra and Combinatorics Conference, Invited talk, University at Albany, Albany, NY. (April 28, 2023)
- Degrees of Grothendieck polynomials and Castelnuovo–Mumford regularity. Combinatorics Seminar, Brandeis University, Zoom. (March 14, 2023)
- Degrees of Grothendieck polynomials and Castelnuovo–Mumford regularity. The Séminaire du LaCIM, Université du Québec à Montréal, Montréal. (November 11, 2022)
- Degrees of Grothendieck polynomials and Castelnuovo–Mumford regularity. UCLA Combinatorics Forum, University of California, Los Angeles, Los Angeles, CA. (October 27, 2022)
- CM regularity and Kazhdan–Lusztig varieties. Schubert Seminar, Zoom. (October 10, 2022)
- Castelnuovo–Mumford regularity of ladder determinantal ideals via Grothendieck polynomials. Fall Eastern Sectional Meeting, The Combinatorics and Geometry of Jordan type and Commuting Varieties, University of Massachusetts Amherst, Amherst, MA. (October 2, 2022)
- Equivariant Cohomology, Schubert Calculus, and Edge Labeled Tableaux. Fall Eastern Sectional Meeting, Young Voices in Combinatorics, University of Massachusetts Amherst, Amherst, MA. (October 1, 2022)
- CM regularity and Kazhdan–Lusztig varieties. Algebraic Geometry Seminar, University of Illinois at Chicago, Zoom. (September 26, 2022)
- Degrees of Grothendieck polynomials and Castelnuovo–Mumford regularity. Combinatorics Seminar, University of Southern California, Los Angeles, CA. (September 14, 2022)
- K-orbit determinantal ideals. Women in Commutative Algebra and Algebraic Geometry Workshop, Fields Institute, Zoom. (February 5, 2022)
- Castelnuovo–Mumford regularity of ladder determinantal ideals via Grothendieck polynomials, Contributed Talk. Combinatorial Algebra Meets Algebraic Combinatorics (CAAC), Fields Institute, Zoom. (January 21, 2022)
- Castelnuovo–Mumford regularity of ladder determinantal ideals via Grothendieck polynomials. Algebra Seminar, Syracuse University, Zoom. (December 10, 2021)
- Castelnuovo–Mumford regularity of ladder determinantal ideals via Grothendieck polynomials. Combinatorics and Geometry of Moduli Spaces session, CMS Winter Meeting 2021, Zoom. (December 6, 2021)
- Castelnuovo–Mumford regularity of ladder determinantal ideals via Grothendieck polynomials. Discrete Geometry and Combinatorics Seminar, Cornell University, Ithaca NY. (November 8, 2021)
- CM regularity and Kazhdan–Lusztig varieties. Algebra and Discrete Math Seminar, University of California, Davis, Davis CA. (September 27, 2021)
- Degrees of Grothendieck Polynomials and CM Regularity. Graduate Online Combinatorics Colloquium, Invited talk, Zoom. (September 15, 2021)
- The A·B·C·Ds of Schubert calculus. IMPANGA 20, Contributed Talk, Banach Center, Zoom. (July 15, 2021)
- CM regularity and Kazhdan–Lusztig varieties. Recent Developments in Gröbner Geometry session, CMS Summer Meeting 2021, Zoom. (June 9, 2021)

- An Efficient Algorithm for Deciding the Vanishing of Schubert Polynomial Coefficients. Combinatorics and Geometry Seminar and Pre-Seminar, University of Washington, Zoom. (April 28, 2021)
- CM regularity and Kazhdan–Lusztig varieties. Algebraic Geometry/Commutative Algebra Seminar, University of Notre Dame, Zoom. (April 8, 2021)
- An Efficient Algorithm for Deciding the Vanishing of Schubert Polynomial Coefficients. Algebraic (and enumerative) combinatorics seminar, University of Waterloo, Zoom. (March 25, 2021)
- Equivariant cohomology, Schubert calculus, and Edge labeled tableaux. Spring Eastern Sectional Meeting, Recent Advances in Schubert Calculus and Related Topics, III, Brown University, Zoom. (March 20, 2021)
- An Efficient Algorithm for Deciding the Vanishing of Schubert Polynomial Coefficients. Discrete Mathematics Seminar, University of British Columbia, Zoom. (March 9, 2021)
- Littlewood-Richardson coefficients and the Hermitian Eigenvalue Problem. AWM Graduate Student Colloquium, University of Illinois at Urbana-Champaign, Zoom. (February 24, 2021)
- Matrix Schubert varieties and CM regularity. Introductory Workshop: Combinatorial Algebraic Geometry Lightning Talks, Contributed Talk, ICERM, Zoom. (February 17, 2021)
- Computing degrees of Grothendieck polynomials. UBC-UIUC Combinatorics Meeting, Zoom. (January 19, 2021)
- An Efficient Algorithm for Deciding the Vanishing of Schubert Polynomial Coefficients. Enumerative Combinatorics session, CMS Winter Meeting 2020, Zoom. (December 5, 2020)
- An Efficient Algorithm for Deciding the Vanishing of Schubert Polynomial Coefficients. Combinatorics Seminar, University of Florida, Zoom. (November 10, 2020)
- Schubert Polynomials and Computational Complexity. Theory of Computation Seminar, University of Illinois at Urbana-Champaign, Zoom. (October 28, 2020)
- The A·B·C·Ds of Schubert calculus. Western Sectional Meeting, Combinatorics of Reduced Decompositions of Elements of Coxeter Groups and Related Topics, California State University, Fresno, Fresno CA. (May 2, 2020 – cancelled)
- Equivariant cohomology, Schubert calculus, and Edge labeled tableaux. Spring Eastern Sectional Meeting, Recent Advances in Schubert Calculus and Related Topics, II, Tufts University, Medford, MA. (March 21, 2020 – cancelled)
- The A·B·C·Ds of Schubert calculus. AMS Spring Southeastern Sectional Meeting, Combinatorics Related to Geometry and Representation Theory, IV, University of Virginia, Charlottesville, VA. (March 15, 2020 – cancelled)
- Degree of Grothendieck polynomials and Castelnuovo–Mumford regularity. AWM Mini Symposium, University of Illinois at Urbana-Champaign, Urbana, IL. (February 8, 2020)
- Degree of Grothendieck polynomials and Castelnuovo–Mumford regularity. Combinatorial Algebraic Geometry session, CMS Winter Meeting 2019, Toronto, ON. (December 8, 2019)
- Degree of Grothendieck polynomials and Castelnuovo–Mumford regularity. Algebra, Geometry, and Combinatorics Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. (November 21, 2019)
- Schubert Polynomials and Computational Complexity. Undergraduate Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. (October 25, 2019)

- Schubert Polynomials and Computational Complexity. New Facets of Algebraic Geometry, Contributed Talk, University of Michigan, Ann Arbor, MI. (October 18, 2019)
- A conversation about Algebraic Combinatorics and Computational Complexity. GROW 2019 Plenary Talk, University of Illinois at Urbana-Champaign, Urbana, IL. (October 6, 2019) (joint with Alexander Yong)
- Complexity, Combinatorial Positivity, and Newton Polytopes. Combinatorics Seminar, Washington University in St. Louis, St. Louis, MO. (April 12, 2019)
- Complexity, Combinatorial Positivity, and Newton Polytopes. Graduate Student Combinatorics Conference, University of Pennsylvania, Philadelphia, PA. (April 6, 2019)
- Complexity, Combinatorial Positivity, and Newton Polytopes. Algebra, Geometry, and Combinatorics Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. (March 28, 2019)
- Complexity and Combinatorial Positivity. AWM Mini Symposium, University of Illinois at Urbana-Champaign, Urbana, IL. (February 9, 2019)
- Vanishing of Littlewood-Richardson polynomials is in P. Workshop on Representation Theory, Combinatorics, and Geometry, Contributed Talk, University of Virginia, Charlottesville, VA.(October 20, 2018)
- Vanishing of Littlewood-Richardson polynomials is in P. Algebra, Geometry, and Combinatorics Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. (November 15, 2017)

POSTER PRESENTATIONS

- CM regularity for 321-avoiding Kazhdan–Lusztig varieties. FPSAC 2023, Davis, California. (July 18, 2023)
- CM regularity and Kazhdan–Lusztig varieties. NCN Combinatorics Klatch, Gather. (August 3, 2021)
- Computational Complexity, Newton Polytopes, and Schubert Polynomials. Algebraic Geometry and Polyhedra, ICERM, Gather. (April 14, 2021)
- CM regularity and Kazhdan–Lusztig varieties. Combinatorial Algebra Meets Algebraic Combinatorics (CAAC) 2021, Université du Québec à Montréal, Zoom. (January 23, 2021)
- CM regularity and Kazhdan–Lusztig varieties. AlCoVE 2020, Zoom. (June 16, 2020)
- CM regularity and Kazhdan–Lusztig varieties. MAAGC 2020,University of Virginia, Charlottesville, VA. (March 13, 2020 – cancelled)
- CM regularity and Kazhdan–Lusztig varieties. ALGECOM XIX, University of Illinois at Urbana-Champaign, Urbana, IL. (March 7, 2020)
- The A·B·C·Ds of Schubert calculus. ALGECOM XVIII, Washington University in St. Louis, St. Louis, MO. (September 21, 2019)
- Complexity, Combinatorial Positivity, and Newton Polytopes. FPSAC 2019, Ljubljana, Slovenia. (July 1, 2019)
- Complexity, Combinatorial Positivity, and Newton Polytopes. ALGECOM XVII, Loyola University Chicago, Chicago, IL. (May 25, 2019)
- Vanishing of Littlewood-Richardson polynomials is in P. ALGECOM XVI, University of Michigan, Ann Arbor, MI. (March 24, 2018)

TEACHING

- University of California, Los Angeles, Instructor of Record
  - Combinatorial Theory (Graduate course)
    - Fall 2024
      - Average rating as an effective teacher (from 1–9): 8.33
      - Average rating as available and helpful outside of the classroom (from 1–9): 8.67
  - Enumerative Combinatorics (Upper division undergraduate course)
    - Spring 2023
      - Average rating as an effective teacher (from 1–9): 8.17
      - Average rating as available and helpful outside of the classroom (from 1–9): 8.13
  - Graph Theory (Upper division undergraduate course)
    - Winter 2023
      - Average rating as an effective teacher (from 1–9): 8.15
      - Average rating as available and helpful outside of the classroom (from 1–9): 8.32
    - Spring 2025
    - Fall 2025
  - Discrete Structures (Lower division, large lecture undergraduate course)
    - Fall 2022
      - Average rating as an effective teacher (from 1–9): 7.44
      - Average rating as available and helpful outside of the classroom (from 1–9): 7.48
    - Spring 2023
      - Average rating as an effective teacher (from 1–9): 7.43
      - Average rating as available and helpful outside of the classroom (from 1–9): 7.38
- ICERM, Teaching Assistant
  - Intro Workshop: Combinatorial Algebraic Geometry (Spring 2021)
- University of Illinois at Urbana-Champaign (UIUC), Teaching Assistant
  - Calculus II, Merit Program (Spring 2018)
    - Active Learning, rated "Outstanding" (in the top 10% for the rating of Instructor's Overall Teaching Effectiveness among UIUC instructors).
  - Calculus I, Merit Program (Fall 2017)
    - Active Learning, rated "Outstanding" (in the top 10% for the rating of Instructor's Overall Teaching Effectiveness among UIUC instructors).
- East Ascension High School, Student Teacher
  - Geometry, Algebra II (Spring 2016)
    - Inquiry-based Learning

PROFESSIONAL ACTIVITIES AND DEPARTMENTAL SERVICE

- UC Davis Algebra & Discrete Mathematics co-organizer (Fall 2026–)
- SLMath: Algebraic Combinatorics Program, lead organizer of Introductory Workshop. (Fall 2027).
- CMND 2026 Thematic Program: Undergraduate mini-course lecturer. (Summer 2026).
- UCLA Physical Sciences New Student Welcome (2023–2025)
- IAS: Workshop on Combinatorics of Enumerative Geometry, participant. (February 2025).
- UCLA Combinatorics Forum co-organizer (Fall 2023–2026)
- UCLA Department of Mathematics Diversity, Equity, and Inclusion Committee, Member (Fall 2023–)
- UCLA Women in Math Mentorship Program, Mentor (Fall 2022–2026)
  - mentored UCLA math undergraduate students, meeting 3-6 times per quarter
- UCLA Curtis Center: Math Saturdays for Teachers at UCLA, Plenary Session Speaker (October 2024).
- IPAM Long Program: Geometry, Statistical Mechanics, and Integrability, Core participant. (Spring 2024).
- Southern California Discrete Mathematics (SoCalDM) Symposium 2024 co-organizer (Spring 2024)
- Women in Commutative Algebra and Algebraic Geometry Workshop, Participant (Spring 2022)
- Association of American Universities PhD Initiative Mathematics, Committee Member (2020-2022)
  - Organized several focus groups of graduate students
  - Designed survey of graduate students and professors, analyzed results, formalized action plan for department.
- Illinois Mathematics Lab, Outreach Manager and Research Leadership Team Member (2017-2022)
  - Processed applications to pair undergraduate and graduate students to projects (once per semester)
  - Organized research presentations and meetings (3 events per semester)
- Illinois Mathematics Lab, Undergraduate Outreach Founder and Graduate Mentor (2018-2022)
  - Planned club activities and outreach events, trained undergraduates ahead of outreach events
- University of Illinois Algebra-Geometry-Combinatorics Seminar co-organizer (Fall 2019-2022)
- Referee/reviewer for Annals of Combinatorics, Electronic Journal of Combinatorics, Algebraic Combinatorics, Combinatorial Theory, Journal of Algebra, Advances in Applied Mathematics, Selecta Mathematica, Transactions of the AMS, FPSAC 2022, FPSAC 2023
- ICERM Workshop: Combinatorial Algebraic Geometry, Virtual participant. (Spring 2021).
- ICERM Combinatorial Algebraic Geometry Graduate/Postoc Seminar co-organizer (Spring 2021)
- ALGECOM XIX co-organizer (Spring 2020)
- Graduate Research Opportunities for Women (GROW), Plenary Speaker and Graduate Student Panelist (October 2019)
- Nebraska Conference for Undergraduate Women in Mathematics (NCUWM), Invited Graduate Student Panelist (January 2019)

- Sloan University Center of Exemplary Mentoring, Graduate Student Mentor (August 2018-May 2019)
- Illinois Combinatorics Lab for Undergraduate Experiences (ICLUE), Graduate Student Mentor (2017-2018)

OUTREACH

- UCLA Curtis Center, Faculty Contact (2022–)
  - Saturday Mathematics at UCLA for Teachers (October 2024)
  - Applied Mathematics Mentorship Program Community Showcase Night (December 2022)
- UCLA Olga Radko Endowed Math Circle
  - Instructor (March 2024)
  - Logistical Aid (September 2023)
- UCLA Undergraduate Mathematics Students Association
  - Guest Speaker (November 2022)
- Illinois Mathematics Lab
  - UIUC Undergraduates: Training of UIUC undergraduate volunteers for IGL Outreach activities (Fall 2018–Spring 2022)
  - Urbana Neighborhood Connections: Co-Organizer, activity for K–5 grade children (November 2021)
  - Garden Hills Academy: Instructor, Co-Organizer, activity for 2–3 grade children (March 2021)
  - International Prep Academy: Co-Organizer, activity for 2–3 grade children (March 2020)
  - SACNAS and Friends: Instructor and Co-Organizer, activity for Champaign-Urbana 1–8 grade children (February 2020)
  - Julia Robinson Day: Instructor, activity for Champaign-Urbana K-6 grade children (February 2020)
  - Central High School: Co-Organizer, activity for 9–12 grade children (November 2018, February 2020)
  - First Lego League Robotics Competition: Instructor and Co-Organizer, activity for Illinois K–5 grade children (January 2017 (volunteer only), January 2018 (volunteer only), January 2019, January 2020)
  - Science at the Market: Instructor and Organizer, activity for Champaign-Urbana K–3 grade children (Fall 2016 (volunteer only), Fall 2017 (volunteer only), Fall 2018, Fall 2019, Fall 2021)
  - Franklin STEAM Academy: Instructor and Co-Organizer, activity for 6–8 grade children (April 2019, August 2019, September 2021)
  - Illini Fest: Instructor, activity for Chicago K–5 grade children (July 2019)
  - Illinois Council of Teachers of Mathematics Math Contest: Instructor and Organizer, activity for Illinois 8–12 grade children (May 2019)
  - Tri-Point High School: Instructor and Organizer, STEM day activity for rural Southern Illinois 10–12 grade children (April 2019)

  - Rantoul High School: Instructor and Organizer, activity for 10-11 grade children (March 2018 (volunteer only), March 2019)
  - Southern Illinois High School: Instructor and Co-Organizer, activity for 9–10 grade children (March 2019)
  - Four Color Fest: Instructor, activity for K–6 grade children (November 2017)
- Summer Illinois Mathematics (SIM) Camp
  - Guest Speaker (2019, 2021)
  - Volunteer (2020)
- Sonia Math Day
  - Instructor and Co-Organizer, activities for Champaign-Urbana 9–12 grade children (November 2017, April 2018)
- Girls Engaged in Math and Science (GEMS)
  - Instructor and Co-Organizer, activity for Champaign-Urbana 5–8 grade children (March 2018)
- iSTEM
  - Instructor, activity for Champaign-Urbana 9–12 grade children (August 2017)

LSU Math Circle

- Assistant Instructor (Summer 2015)