Rachel Jade Domagalski

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1 EDUCATION

Ph.D. Candidate, Mathematics (Michigan State University) **Expected Graduation August 2021**

- Advisor: Dr. Bruce Sagan, Co-Advisor: Dr. Zachary Neal
- Project: *Validating and Extending Methods for Extracting the Backbone of Bipartite Projections*
- Project: *Shuffle Compatibility and Pattern Avoidance of Cyclic Permutation Statistics*

Master of Arts, Mathematics (Central Michigan University) **May 2017**

- Accelerated Master of Arts in Mathematics, GPA 3.78
- Master's Thesis, *On the tree cover number and positive semi-definite maximum nullity of graphs*,
- Advisor: Dr. Sivaram K. Narayan

Bachelor of Science, **Mathematics** (Central Michigan University) **May 2016**

- Pure Mathematics Concentration
- Summa Cum Laude, GPA: 3.96
- Honors Capstone Project, *Frames in Finite Dimensions and Combinatorial Designs*,
- Advisor: Dr. Sivaram K. Narayan

2 EMPLOYMENT

Graduate Research Assistant: Michigan State University

- Appointment through Dr. Bruce Sagan, Dr. Zachary Neal
- Extracting the Backbone of Weighted Networks (August 2020 – August 2021)
  - Funded by NSF Grant #2016320
  - Funded by Center for Business and Social Analytics Seed Grant
- Validating and Extending Methods for Extracting the Backbone of Bipartite Projections, (May 2019 – May 2020)
  - Funded by NSF Grant #1851625
- Extracting the Backbone of Bipartite Projections, (August 2018 – December 2018)
  - Funded by Global Urban Studies Program

Graduate Teaching Assistant: Michigan State University

- Instructor of Record for MTH 103B: College Algebra II (May 2020 – August 2020)
- Instructor of Record for MTH 124: Survey of Calculus with Business Emphasis (January 2019– May 2019)
- Teaching assistant for MTH 101: Quantitative Literacy (May 2018 – August 2018)
- Teaching assistant for MTH 103: College Algebra (May 2018 – August 2018)
- Calculus tutor for undergraduate students in the Mathematics Learning Center

Graduate Teaching Assistant: Central Michigan University

- Instructor of record for two sections of MTH 105: Intermediate Algebra (January 2017 – May 2017)
- Instructor of record for two sections of MTH 101: Elementary Algebra (August 2016 – December 2016)
- Grader for MTH 133: Calculus II, for Dr. Sivaram K. Narayan (May 2016 – August 2016)

Math Assistance Center Tutor: Central Michigan University (May 2016 – May 2017)

- I assisted students with homework on various mathematics classes, ranging from elementary algebra through advanced calculus and algebra classes.

Graduate Assistant at Michigan Math and Science Scholars: University of Michigan (July 2016, July 2017)

- I assisted in teaching a course to advanced high school students from around the world on the mathematical connections in music theory under the direction of Dr. Lon Mitchell of Mathematical Reviews

Pacific Undergraduate Research Experience: University of Hawai`i Hilo (June 2015 – August 2015)

- I conducted research with three other students on "The Catenary Degree of Numerical Monoids Generated by a Generalized Arithmetic Sequence." Each week was spent investigating patterns in factorization graphs and proving conjectures about the catenary degree of monoids in embedding dimension three. These results were presented at the 2016 Joint Mathematics Meetings, 2016 Nebraska Conference for Undergraduate Women in Mathematics, and at Central Michigan University.

Research Experience for Undergraduates: Central Michigan University (June 2014 – August 2014)

- I conducted research with two other students on "Frames in Finite Dimensions." We spent each day working through examples and trying to prove various conjectures on the structure and decomposition of tight frames. These results were presented at the 2015 Joint Mathematics Meetings, Nebraska Conference for Undergraduate Women in Mathematics, Sampling Theory and Applications Conference, Capitol Scholars, and at Central Michigan University.

Mathematics Research Assistant: Central Michigan University (August 2014 – August 2017)

- I worked for Dr. Sivaram K. Narayan, assisting in proofreading and typing research articles, composing flyers and advertisements for Central Michigan University's Research Experience for Undergraduates program, and assisting in preparing slides for talks at conferences.

Mathematics Grader: Central Michigan University (January 2014 – June 2015)

- I was a grader for Dr. Mohan Shrikhande. I assisted in grading student homework, quizzes, and exams for calculus I and calculus III classes.

Supplemental Instructor: Central Michigan University (December 2013 – June 2014)

- I led weekly review sessions for students enrolled in pre-calculus, created extra problem sets and practice exams, and held office hours for additional tutoring.

3 GRADUATE RESEARCH

Ph.D. I am currently working under the direction of Dr. Bruce Sagan and Dr. Zachary Neal on a project entitled "Validating and Extending Methods for Extracting the Backbone of Bipartite Projections". This project explores the use of bipartite network projections to validly infer unobserved networks. Many methods of making these inferences exist however their validity has not been tested. In this project we test methods against benchmark bipartite network data, as well as develop and disseminate the widely used R-package backbone that implements these methods. This research is funded by NSF Grant #1851625 and #2016320, as well as CBSA Seed Grant.

Ph.D. I am currently working under the direction of Dr. Bruce Sagan along with Michigan State University graduate students Jinting Liang, Quinn Minnich, and undergraduate students Jamie Schmidt, Alexander Sietsema on a project regarding permutation statistics of both linear and cyclic permutations. Specifically, we examine shuffle compatibility, pattern avoidance, and distributions of cyclic statistics.

Masters: I completed my Master's Thesis under the direction of Dr. Sivaram K. Narayan of Central Michigan University. My thesis, entitled "On the tree cover number and positive semi-definite maximum nullity of graphs", explores the relationship between the tree cover number $T(G)$ of two graphs G_1 and G_2, and the new graph G generated using graph operations such as the Cartesian Product, Corona, Shadow graph and others. In addition to finding these relationships, we verify whether the conjecture $T(G) \leq M_+(G)$ holds under the graph operations, where $M_+(G)$ is the positive semi-definite maximum nullity of G. This work has been published in The Electronic Journal of Linear Algebra.

4 UNDERGRADUATE RESEARCH

As part of the Honors Program at Central Michigan University, I completed an Honors Capstone Project during Fall 2015-Spring 2016, entitled "Frames in Finite Dimensions and Combinatorial Designs" with advisor Dr. Sivaram K. Narayan. In this work, we examined the construction of tight frames using combinatorial objects such as difference sets and strongly regular graphs. I presented our findings at Central Michigan University's Graduate Student Seminar and Student Research and Creative Endeavors Exhibition.

I participated in University of Hawai`i Hilo's Pacific Undergraduate Research Experience, sponsored by NSF-REU grant DMS-1045082 and DMS-1045147 and an NSA grant. I worked with Dana Lacey, James Pangelinan, and Marly Comar under the direction of Dr. Robert Pelayo and Dr. Brian Wissman. During the eight-week program in summer 2015, we studied the catenary degree of numerical monoids and completely characterized the catenary degree of numerical monoids generated by a generalized arithmetic sequence of embedding dimension three.

I participated in Central Michigan University's Research Experience for Undergraduates, sponsored by NSF-REU grant DSM II-56890. I worked with Hong Suh and Xingyu Zhang under the direction of Dr. Yeonhyang Kim and Dr. Sivaram Narayan. During the eight-week program in summer 2014, we studied frames in finite dimensions and found various results on tight frame structure and decomposition, strict scaling properties, and scalability polytope results. Some of the results have been published in IEEE's Sampling Theory and Applications 2015 conference proceedings. A manuscript containing most of the remaining results has been published in Operators and Matrices.

5 PUBLICATIONS

- Domagalski, Liang, Minnich, Sagan, Schmidt, Sietsema (submitted 2021). Pinnacle Set Properties. https://arxiv.org/abs/2105.10388
- Neal, Z. P., Domagalski, R., & Yan, X. (2021). Homophily in Collaborations among US House Representatives, 1981 – 2018. *Social Networks*, https://doi.org/10.1016/j.socnet.2021.04.007.
- Domagalski R, Neal Z, Sagan B (2021). backbone: Extracts the Backbone from Weighted Graphs. R package version 1.3.1, https://CRAN.R-project.org/package=backbone.
- Neal, Z. P., Domagalski, R., & Sagan, B. (2021). Analysis of spatial networks from bipartite projections using the R backbone package. *Geographical Analysis*. https://doi.org/10.1111/gean.12275
- Domagalski, R., Neal, Z. P., & Sagan, B. (2021). Backbone: An R package for extracting the backbone of bipartite projections. *PLOS ONE*, *16*(1), e0244363. https://doi.org/10.1371/journal.pone.0244363
- Neal, Z., Neal, J. W., & Domagalski, R. (2021). False Positives Using Social Cognitive Mapping to Identify Children's Peer Groups. *Collabra: Psychology*, *7*(17969). https://doi.org/10.1525/collabra.17969
- Domagalski, R., & Narayan, S. (2020). Tree Cover Number and Maximum Semidefinite Nullity of Some Graph Classes. *The Electronic Journal of Linear Algebra*, *36*(36), 678–693. https://doi.org/10.13001/ela.2020.5319
- Neal, Z. P., Domagalski, R. & Yan, X. (Submitted). Party Control as a Context for Homophily in Collaborations among US House Representatives, 1981 - 2015. Social Networks.
- Domagalski, R., Chan, A., Kim, Y. H., Narayan, S. K., Suh, H., & Xingyu, Z. (2017). Minimal scalings and structural properties of scalable frames. *Operators and Matrices*, 11(4), 1057–1073. https://doi.org/10.7153/oam-2017-11-73

- Domagalski, R., Kim, Y. H., & Narayan, S. K. (2015). On minimal scalings of scalable frames. *2015 International Conference on Sampling Theory and Applications (SampTA)*, 91–95. https://doi.org/10.1109/SAMPTA.2015.7148857

6 SOFTWARE

I am the maintainer and co-author of the R package "backbone", along with Dr. Zachary Neal and Dr. Bruce Sagan. This package provides methods for extracting from a weighted graph a binary or signed backbone that retains only the significant edges. The "backbone" package combines different methods from across disciplines to provide researchers with an easy to use, accessible, open-source way to extract the data they need. This package has been downloaded over 10,000 times and is actively used in the network science community.

7 TEACHING EXPERIENCE

- Summer 2020: instructor of record for MTH 103B: College Algebra II at Michigan State University
    - Responsible for writing lesson plans, quizzes, and exams, lecturing, holding weekly office hours, and grading. This class was taught entirely online.
- Spring 2019: instructor of record for MTH 124: Survey of Calculus at Michigan State University.
    - Responsible for writing lesson plans, lecturing, running lab activities, holding weekly office hours, grading exams.
- Summer 2018: teaching assist for MTH 101: Quantitative Literacy and MTH 105: College Algebra
    - Assist with classroom lab activities and grading, provide feedback on classroom structure and pacing.
- Fall 2017 and Spring 2018: Yearlong teaching training through Center of Instructional Mentoring
- Fall 2016: instructor of record, two sections of MTH 101: Elementary Algebra at Central Michigan University
    - Responsible for writing syllabus, writing lesson plans, lecturing, writing and grading quizzes, holding weekly office hours, grading final exams.
- Spring 2017: instructor of record, two sections of MTH 105: Intermediate Algebra at Central Michigan University
    - Responsible for writing syllabus, writing lesson plans, lecturing, writing and grading quizzes, holding weekly office hours, grading final exams.

8 WORKSHOPS

- Erdős Institute Data Science Boot Camp, virtual, May 2021 – month long training on data science and machine learning techniques, during which I completed a team project "ClassifyMyMeds: Predicting Prior Authorization Approval and Volume", which won 3rd place out of 50 teams. Project details and presentation can be found at: https://github.com/domagal9/classifymymeds
- Reclaiming STEM 2020 – workshop intended to address the need for science communication and science policy training spaces for minoritized groups, virtual, September and October 2020.
- Introduction to bipartite projections with backbone – INSNA Sunbelt workshop with Dr. Bruce Sagan and Dr. Zachary Neal, July 13th, 2020, virtual.
- Lead a Git and GitHub workshop through American Mathematical Society Graduate Student Chapter, November 21st, 2019, East Lansing, MI
- Lead a LaTeX tutorial and created Michigan State University LaTeX templates for American Mathematical Society Graduate Student Chapter, October 14th, 2019, East Lansing, MI
- ComSciCon – Michigan, August 17th – August 18th, 2019, East Lansing, MI.
- American Institute of Mathematics, Spring Opportunities, April 15th – April 17th, 2019, San Jose CA.

- Mathematical Sciences and Research Institute (MSRI) Summer Graduate School, Representations of High Dimensional Data Analysis, July 9th - July 20th, 2018, Berkeley CA.

9 Conference and Seminar Presentations

- (Upcoming) Enumerative and Algebraic Combinatorics Seminar, Laboratoire Bordelais De Recherche En Informatique, Virtual, June 28th, 2021 – 60 minute talk on "Cyclic Pattern Containment and Avoidance", joint work with Jinting Liang, Quinn Minnich, Dr. Bruce Sagan, James Schmidt, and Alexander Sietsema.
- (Upcoming) Permutation Patterns 2021, Virtual, June 15th and 16th, 2021 – 10 minute talk on "Admissible Pinnacle Sets and Ballot Numbers", joint work with Jinting Liang, Quinn Minnich, Dr. Bruce Sagan, James Schmidt, and Alexander Sietsema.
- CanaDAM 2021, The Canadian Discrete and Algorithmic Mathematics Conference, Virtual, May 26th, 2021 – 25 minute talk on "Pattern Avoidance in Circular Permutations", joint work with Jinting Liang, Quinn Minnich, Dr. Bruce Sagan, James Schmidt, and Alex Sietsema.
- North American Social Networks Conference, Virtual, January 25th, 2021 – 20 minute talk on "Backbone: an R package for extracting the backbone of bipartite projections", with Dr. Bruce Sagan and Dr. Zachary Neal.
- Graduate and Undergraduate Student Seminar, Michigan State University, October 22nd, 2020 – 60 minute talk on "Inferring relationships through graph theory and social network analysis".
- International Network for Social Network Analysis, virtual, July 15th, 2020 – 20 minute talk on "An R package for extracting the backbone of bipartite projections", with Dr. Bruce Sagan and Dr. Zachary Neal.
- New York Regional Graduate Mathematics Conference, Syracuse University, March 28th, 2020 – 30 minute talk on "Inferring relationships through graph theory and social network analysis", Virtual
- The Sci-Files Podcast, "Math Networks", Impact 89 FM WDBM, October 21st, 2019 – interview about graph theory, social network analysis, and backbone extraction research. Available from https://share.transistor.fm/s/a87ee089 as well as on Spotify and Apple Podcasts.
- International Sunbelt Social Network Conference, Montréal, Québec, CA, June 22nd, 2019 – 20 minute talk with Dr. Zachary Neal titled "Evaluating the Extraction of Signed Networks from Bipartite Projections", description of research project under direction of Dr. Bruce Sagan and Dr. Zachary Neal.
- Student Algebra and Combinatorics Seminar, April 29, 2019 – 60 minute talk titled "Validating and Extending Methods for Extracting the Backbone of Bipartite Projections", description of research project under direction of Dr. Bruce Sagan and Dr. Zachary Neal.
- Combinatorics and Graph Theory Seminar, November 28, 2017 – 60 minute talk titled "Tree Cover Number and Maximum Semidefinite Nullity of Graphs Part 2", part two of a two-part talk in which I elaborated on the work completed for Master's thesis degree with advisor Dr. Sivaram K. Narayan.
- Combinatorics and Graph Theory Seminar, November 21, 2017 – 60 minute talk titled "Tree Cover Number and Maximum Semidefinite Nullity of Graphs Part 1", part one of a two-part talk in which I introduced the background of the work completed for Master's thesis degree with advisor Dr. Sivaram K. Narayan.
- Master's Thesis Defense at Central Michigan University, February 17, 2017 – 60 minute talk titled "Tree Cover Number and Maximum Semidefinite Nullity of Graphs", work completed for Master's thesis degree with advisor Dr. Sivaram K. Narayan.
- Graduate Student Seminar at Central Michigan University, April 26, 2016 – 60 minute talk titled "Frames in Finite Dimensions and Combinatorial Designs", work completed for Central Michigan University's Honors Capstone Project during Fall 2015 and Spring 2016 with advisor Dr. Sivaram K. Narayan.
- Student Research and Creative Endeavors Exhibition, Central Michigan University, April 20th, 2016 – Poster presentation on "Frames in Finite Dimensions and Combinatorial Designs", work completed for Central Michigan University's Honors Capstone Project during Fall 2015 and Spring 2016 with advisor Dr. Sivaram K. Narayan.
- Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, Nebraska, January 29th-31st, 2016 – 15 minute talk titled "On the Catenary Degree of Numerical Monoids Generated by a Generalized Arithmetic

Sequence", research completed during University of Hawai`i Hilo's Pacific Undergraduate Research Experience during summer 2015. Joint work with Dana Lacey, James Pangelinan and Marly Cormar under the guidance of Dr. Robert Pelayo and Dr. Brian Wissman.

- Joint Mathematics Meetings, Seattle, Washington, January 6th-9th, 2016—10 minute talk titled "On the Catenary Degree of Numerical Monoids Generated by a Generalized Arithmetic Sequence", research completed during University of Hawai`i Hilo's Pacific Undergraduate Research Experience during summer 2015. Joint work with Dana Lacey, James Pangelinan and Marly Cormar under the guidance of Dr. Robert Pelayo and Dr. Brian Wissman.
- American Mathematical Society Graduate Student Chapter Meeting, Central Michigan University, October 26, 2015 – 60 minute talk titled "A Friendly Introduction to Factorization Theory and Monoids", research completed during University of Hawai`i Hilo's Pacific Undergraduate Research Experience during summer 2015. Joint work with Dana Lacey, James Pangelinan and Marly Cormar under the guidance of Dr. Robert Pelayo and Dr. Brian Wissman.
- Sampling Theory and Applications, American University, Washington, DC, May 25th-29th, 2015—25 minute talk titled "On minimal scalings of scalable frames", research completed during Central Michigan University's Research Experience for Undergraduates during summer 2014. Joint work with Hong Suh and Xingyu Zhang under guidance of Dr. Yeonhyang Kim and Dr. Sivaram K. Narayan.
- Capitol Scholars, Michigan State Capitol, April 23, 2015 – poster presentation to state legislators on "Tight Frame Structure", research completed during Central Michigan University's Research Experience for Undergraduates during summer 2014. Joint work with Hong Suh and Xingyu Zhang under guidance of Dr. Yeonhyang Kim and Dr. Sivaram K. Narayan.
- Student Research and Creative Endeavors Exhibition, Central Michigan University, April 22nd, 2015 – Poster presentation on "Tight Frame Structure", research completed during Central Michigan University's Research Experience for Undergraduates during summer 2014. Joint work with Hong Suh and Xingyu Zhang under guidance of Dr. Yeonhyang Kim and Dr. Sivaram K. Narayan.
- Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, Nebraska, January 23rd-25th, 2015 – 15 minute talk on "Tight Frame Structure", research completed during Central Michigan University's Research Experience for Undergraduates during summer 2014. Joint work with Hong Suh and Xingyu Zhang under guidance of Dr. Yeonhyang Kim and Dr. Sivaram K. Narayan.
- Joint Mathematics Meetings, San Antonio, Texas, January 10th-13th, 2015– 10 minute talk and poster presentation on "Tight Frame Structure and Scalability", research completed during Central Michigan University's Research Experience for Undergraduates during summer 2014. Joint work with Hong Suh and Xingyu Zhang under guidance of Dr. Yeonhyang Kim and Dr. Sivaram K. Narayan.

10 SCHOLARSHIPS AND AWARDS

- Dissertation Completion Fellowship (May 2021 – August 2021)
    - Funded through Michigan State University Graduate School, this fellowship is awarded to students to allow them to devote full time to dissertation writing and completion.
- Graduate Research Assistantship (August 2020 – August 2021)
    - Funded through NSF Grant #2016320, "Extracting the backbone of weighted networks", and Michigan State University's Center for Business and Social Analytics Seed Grant under direction of Co-PIs Dr. Bruce Sagan, department of Mathematics, and Dr. Zachary Neal, department of Psychology.
- Graduate Research Assistantship (May 2019 – May 2020)
    - Funded through NSF Grant #1851625, "Validating and Extending Methods for Extracting the Backbone of Bipartite Projections" under direction of Co-PIs Dr. Bruce Sagan, department of Mathematics, and Dr. Zachary Neal, department of Psychology.
- Cloud Computing Fellow (October 2019 – May 2020)

    - Research opportunity including workshops on aspects of cloud-based computing and hands-on support for optimizing my own research for cloud computing, through Michigan State University's Cyber-Enabled Research and the ITS Analytics and Data Solutions group.
- Social Science Data Analytics Data Visualization Winner (September 2019)
    - Visualizations were judges on effectiveness, creativity, and design by three faculty judges at Michigan State University
    - First Place for "Waves of Polarization in the US Senate" with Dr. Zachary Neal
    - Popular Vote winner for "Polarization in the US Senate" with Dr. Zachary Neal
- Graduate Research Assistantship (August 2018 – December 2018)
    - Research assistantship position at Michigan State University, through Dr. Zachary Neal, department of Psychology
- Graduate Teaching Assistantship (August 2017 – August 2022)
    - Teaching position at Michigan State University, reduced teaching load for Fall 2017, Spring 2018, stipend and tuition waiver awarded
- Graduate Teaching Assistantship (June 2016 – May 2017)
    - Teaching position at Central Michigan University; stipend and tuition waiver awarded
- Central Michigan University Honors Program Graduating Senior Academic Excellence Award (May 2016)
    - Award given to one graduating senior of the Honors Program who has excelled in academics.
- Richtmeyer-Foust Award Finalist (May 2016)
    - Outstanding senior in Mathematics award, recommended by mathematics department faculty
- Provost's Award for Undergraduate Research and Creative Accomplishment (2015/2016 Academic Year)
    - Award given to recognize outstanding research, awarded to up to two students from each college per year
- Central Michigan University's Graduate Fellowship (Fall 2015-Spring 2016)
    - Tuition waiver and stipend awarded
- Central Michigan University's Centralis Scholar (2012-2016)
    - Selected as one of twenty recipients from over 2,000 candidates
    - Full Academic Ride to Central Michigan University, Honor's program scholarship
- Dean's List (Fall 2015-Spring 2016)
    - Ranking given to students who achieve a 3.5 GPA of higher
- President's List (Fall 2012-Spring 2015)
    - Ranking given to students who achieve a perfect 4.0 GPA during an academic term
- Arnold Hammel KME Endowed Award (Fall 2015-Spring 2016)
    - This award was created in honor of Arnie Hammel, retired Mathematics Professor and advisor to the mathematics honor society, Kappa Mu Epsilon (KME).
- Goldwater Nominee (2015)
    - Selected as one of Central Michigan University's candidates for the national scholarship
    - Awarded to undergraduates who show immense promise as researchers in their science, technology, engineering or mathematics

11 INVOLVEMENT

American Mathematical Society Graduate Student Chapter: **(**Fall 2018 – Present)

- Founded the Student Chapter at Michigan State University, initiated Fall 2018
- President: August 2019 – August 2020
- Secretary: Fall 2018 – August 2019
- Activities: Discuss interesting mathematical discoveries, plan mathematically themed social and networking activities for graduate students and encourage further involvement in the mathematics community.

Association for Women in Mathematics: (Spring 2018 – Present)

- Social Media Chair: January 2019 – August 2019
- Activities: Create events and activities that strive to encourage people of all genders to study and have active careers in the mathematical sciences. As social media chair, duties include updating social media websites to reach and engage with members.

Social Science Data Analytics Student Engagement Program: **(**July 2019 – Present)

- Member of student engagement program to prepare future data scientists to take social science questions.

Outreach for Undergraduates and Prospective Graduate Students Interested in Mathematics

- Panel member on "Careers in Mathematics", Kappa Mu Epsilon and Gamma Iota Sigma panel at Central Michigan University, February 2019
- Panel member on "Grad School Apps and Transitioning to Grad School", American Mathematical Society panel at Michigan State University, September 2018
- Panel member at Michigan State University's prospective graduate student visiting day, March 2018.

American Mathematical Society CMU Graduate Student Chapter: **(**Fall 2016 to Spring 2017)

- Vice President: May 2016 to May 2017
- Social Media/Public Relations: August 2015 – May 2016
- Duties: As vice president, duties involve helping prepare for meetings, assisting in finding speakers, attending Student Government meetings and communicating our agendas to the student body. As social media/public relations, duties included updating social media websites to reach and engage more members, setting up an organization personal website, and communicating with the college media.
- Activities: Discuss interesting mathematical discoveries, listen to and support graduate student speakers in their work and endeavors, and encourage further involvement in the mathematics community.

Student Government Association: **(**Fall 2016 to Spring 2017)

- House Representative for AMS Graduate Student Chapter: As a representative, I promote the activities provided by AMS Graduate Student Chapter to the student body and vote on legislation to improve our university's community and learning environment.
- Academic Affairs Committee member: As a member of this committee, I work on creating legislation that promotes the academic well-being of the student body at Central Michigan University.

Kappa Mu Epsilon – **Mathematical Honor Society**: (January 2014 to Spring 2017)

- President May 2015 – May 2016
- Treasurer: August 2014 – May 2015
- Duties: As president, duties involve leading general meetings, organizing talks on various mathematical topics of interest to undergraduates, involving undergraduates in math conferences, competitions, and volunteerism. As treasurer, duties involve collecting membership dues, as well as managing money during fundraisers and other programs put on by the organization.
- Activities: Discuss interesting mathematical discoveries, tutor students who need help in mathematics, provide professional opportunities to members, present student research, learn about topics not offered through undergraduate courses, and attend mathematical conferences.

Mathematics Competitions

- Participated in the Michigan Autumn Take Home Challenge during Fall 2013 and Fall 2015
- Participated in the William Lowell Putnam Competition during Fall 2014

CMU Running Club: **(**August 2013 to May 2016)

- Social Chair August 2014 – May 2015
- Duties: As social chair, organize team events to promote team bonding and friendship, create a welcoming atmosphere, update social networks to keep members informed of club activities.
- Activities: Attend practices, compete in races against other club teams from across the nation, facilitate community running events, encourage fitness for students.

Film Society: **(**August 2013 – May 2015)

- Activities: View and discuss old and new interesting films, organize and manage the Central Michigan University film festival, create and submit student films for film competitions and film festivals.

Honors Outreach Network and Honors Program Philanthropic Society: **(**August 2013 – December 2013)

- Activities: Participate in volunteer opportunities and service projects, plan and create enrichment events for CMU's honors program.

Central Michigan University Varsity Track Team, Pole Vaulter

- Competed in uniform during indoor track season 2013
- Competed as a red shirt freshman during outdoor track season 2013