

EMMA R. ZAJDELA

*mathematical modeling • data science • complex systems
applied dynamical systems • physics of social systems
team science • science of science • autonomous vehicles
science diplomacy in the Middle East*

High Meadows Environmental Institute (HMEI)
Princeton University
Guyot Hall Room 132, Princeton, NJ, 08544
emma.zajdela@princeton.edu
www.mathemmatician.com

EDUCATION

Northwestern University, Dept. of Engineering Sciences and Applied Mathematics , Evanston, IL	2018-2023
Ph.D. in Engineering Sciences and Applied Mathematics	August 2023
M.S. in Engineering Sciences and Applied Mathematics	2020
University of Illinois-Chicago , Chicago, IL	2016-2018
M.S. in Mathematics with a concentration in applied mathematics	
Loyola University Chicago , Chicago, IL	2014-2016
B.S. <i>cum laude</i> in Mathematics	
B.S. <i>cum laude</i> in Theoretical Physics and Applied Mathematics	
Minor in International Studies; Interdisciplinary Honors Program	
College Stanislas , Paris, France	2010-2014
Classe Préparatoire (intensive two-year preparatory classes focused on mathematics, physics, and engineering, ranked top three in the country)	
Scientific baccalaureate <i>summa cum laude</i> with a concentration in mathematics	2012

RESEARCH EXPERIENCE

Princeton University

High Meadows Environmental Institute (HMEI), Department of Ecology and Evolutionary Biology

Center for Policy Research on Energy and the Environment (C-PREE), School of Public and International Affairs

IC Postdoctoral Research Fellow with Simon Levin and Michael Oppenheimer

Project: Modeling the Dynamics of Complex Socio-Ecological Systems at the Nexus of Environmental Challenges, Scientific Collaboration, and Conflict

Northwestern University, Dept. of Engineering Sciences and Applied Mathematics , Evanston, IL	2018-2023
<i>PhD Candidate, NSF Graduate Research Fellow, advised by Prof. Daniel Abrams</i>	
Dissertation: Modeling the Dynamics of Complex Systems with applications to scientific collaboration at conferences, fashion trends, and coupled oscillators with amplitudes	
Loyola University Chicago, Department of Mathematics and Statistics , Chicago, IL	March 2016-February 2017
<i>Research Assistant to Prof. Peter Tingley</i>	
Project: Using game theoretical principles to determine optimal strategies for two-player poker games.	
Loyola University Chicago, Institute of Environmental Studies , Chicago, IL	Sept. 2015-August 2016
<i>Research Assistant to Prof. Kelly Garbach</i>	
Project: Performed data analysis using R for the Integrated Crop Pollination Project funded by USDA-NIFA SCRI to investigate the performance, economics, and farmer perceptions of pollination strategies in various crops.	

PROFESSIONAL EXPERIENCE

Malta Conferences Foundation –Science as a Bridge to Peace in the Middle East , Evanston, IL	January 2016-present
<i>Treasurer and Member of the Board of Directors</i>	January 2023-present
<i>Senior Assistant to the President, Prof. Zafra Lerman</i>	January 2022-January 2023
<i>Assistant to the President</i>	January 2016-January 2022
Support the President in all aspects of running the non-profit organization, including planning Malta Conferences (2017, 2019, 2022), which bring together scientists from 15 Middle East countries; design program evaluation; raise funds through proposal-writing and individual donors; communicate with board members, participants and dignitaries.	

Green SEED Energy, Chicago, IL Summer 2013
Intern, Supervisor: Judy Freeman
Assisted in writing a bid for a multi-million-dollar contract on sustainable energy generation and use with the Metropolitan Water Reclamation District (MWRD). Participated in negotiations with consortium partners.

French Ministry of Overseas Territories, Paris, France Summer 2010
Intern, Supervisor: Florence Milin-Rance
Adapted and wrote French and European legislation for French overseas territories; Performed research and wrote briefs for ministry officials.

FELLOWSHIPS

Intelligence Community Postdoctoral Research Fellowship, Oak Ridge Institute for Science and Education 2023 – 2025
Funding for two years (\$187,500)

Intersection Science Fellowship, Northwestern Institute on Complex Systems January 2022
The Intersection Science Fellowship is awarded to a very select group of McCormick School of Engineering and Applied Science PhD students who are pursuing research involving the applications of data science and engineering methods in projects undertaken in collaboration with faculty from another School at Northwestern. The fellowship covers stipend and tuition for two quarters and a \$1,000 research allowance.

Global Impacts Graduate Fellowship, Northwestern Buffett Institute for Global Affairs Fall 2020 – Spring 2021
Financial and programmatic support for an interdisciplinary cohort of about 20 graduate students engaged in scholarship related to Northwestern Buffett's mission of exploring and addressing global challenges. Financial support includes an enhanced stipend and tuition coverage for one academic year

Born Seeker Fellowship Finalist, Scientista Foundation and Perricone MD March 2019
"...for bold, visionary young women in STEM who are looking to make an impact in their respective fields... women in STEM who embody the spirit of a "Born Seeker" - someone who is in the passionate pursuit of the truth. The work they do pushes boundaries and meaningfully impacts society on a local, national, and often global level"

Walter P. Murphy Fellowship, Northwestern University September 2018
Endowed fellowship that enables outstanding students to pursue their first year of their graduate study with minimal teaching or research obligations.

NSF Graduate Research Fellowship, National Science Foundation May 2017 – 2022
Funding for three years, not consecutive, over five years (\$138,000)

HONORS AND AWARDS

Carl B. Allendoerfer Award, Mathematical Association of America (MAA) August 2022
for the expository article "When to Hold 'Em" published in the Mathematics Magazine. Up to two of these awards are given annually. https://www.maa.org/sites/default/files/Awards/MathFest2022_PrizesAwards.pdf

MENA Languages and Culture Award, Northwestern MENA Languages Program June 2021
for "Outstanding Achievement in Second-Year Arabic"

1st Place Team in the 2nd Annual Supply Chain Management Data Analytics Competition April 2020
Loyola University Chicago Quinlan School of Business and Northwestern University Transportation Center in partnership with Redwood Logistics and FreightWaves
<https://www.luc.edu/leadershiphub/centers/supplyandvaluechain/about/newsandprofiles/archive/dataanalyticscompetition2020.shtml>

Richard J. Driscoll Memorial Award, Loyola University Chicago Dept. of Mathematics May 2016
For "outstanding achievement in mathematics."

Sigma Pi Sigma Award, Loyola University Chicago Dept. of Physics May 2016
"In recognition of outstanding ability and progress in the study of Physics."

Honorable Mention, UNESCO Model United Nations Conference, Paris, France February 2010

OTHER FUNDING AWARDED

International Conference Travel Award , Northwestern Buffett Institute for Global Affairs (\$1,000)	December 2022
Professional Development Award , National Science Policy Network (\$500)	December 2022
Graduate Dissertation Research Travel Award , Northwestern Buffett Institute for Global Affairs (\$4,985) <i>For Project: "Modeling Cooperation in Biological and Social Systems with Applications to UN SDGs 15 and 16."</i>	May 2022
Undergraduate Research Assistant Program (URAP) , Northwestern University (co-advisor) (\$3,500)	Summer 2021
SIAM Student Travel Award , SIAM Conference on Applications of Dynamical Systems (DS21)	May 2021
President's Research in Diversity Travel Award , University of Illinois System (\$600)	October 2017

PEER-REVIEWED PUBLICATIONS

Zajdela, E. R., Huynh, K., Wen, A. T., Feig, A. L., Wiener, R. J., & Abrams, D. M. (2022). Dynamics of social interaction: Modeling the genesis of scientific collaboration. *Physical Review Research*, 4(4), L042001.
<https://journals.aps.org/prresearch/abstract/10.1103/PhysRevResearch.4.L042001>

Said M, **Zajdela ER**, Stathopoulos A. (2022) Accelerating Adoption of Disruptive Technologies: Impact of COVID-19 on Intentions to Use On-Demand Autonomous Vehicle Mobility Services. *Transportation Research Record*.
doi:10.1177/03611981221099276

Parsons, K.; Tingley, P.; **Zajdela, E.R.** (2021) When to Hold 'Em, *Mathematics Magazine*, 94:3, 201-212, DOI: 10.1080/0025570X.2021.1908785, <https://doi.org/10.1080/0025570X.2021.1908785>

Zajdela, E.R. & Lerman, Z. (2021). Malta X Anniversary and COVID-19. *Chemistry International*, 43(2), 16-19.
<https://doi.org/10.1515/ci-2021-0204>

WORK IN PROGRESS

Zajdela, E.R.; Huynh, K.; Feig, A.L.; Wiener, R.J. & Abrams, D.M. Organizers exercise greater social control at virtual conferences. *[under review]*

Zajdela, E.R. & Abrams, D.M. Phase chimera states: Frozen patterns of disorder. <https://arxiv.org/abs/2308.06190>

Zajdela, E.R.; White, J.H.; Kohlberg, E.; Caticha, A. & Abrams, D.M. Back in fashion: Modeling the cyclical dynamics of trends.

Parsons, K.; Tingley, P.; **Zajdela, E.R.** Bet sizing in half-street poker.

ARTICLES

Zajdela, ER. Catalyzing Collaborations: Modeling the Dynamics of Scientific Collaboration at Conferences. *SIAM News Blog*, January 21 2022 *[invited article]*, <https://sinews.siam.org/Details-Page/catalyzing-collaborations-modeling-the-dynamics-of-scientific-collaboration-at-conferences>.

Guest editorial: Lerman, ZM; **Zajdela, ER** *Malta conferences use science diplomacy as a bridge to peace in the Middle East*. Chem. Eng. News, March 16, 2020, 98 (10), p. 2. <https://cen.acs.org/education/outreach/Malta-conferences-use-science-diplomacy/98/i10>.

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- Lerman, ZM.; **Zajdela, ER** *Chemistry for Peace*. The Israel Chemist and Chemical Engineer. July 2020, Issue 6, p. 6-7. <https://www.digipage.co.il/projects/2020/ICE/6/6/>
- Lerman, ZM; **Zajdela, ER** *Chemistry for Peace*. The Chemical Bulletin, April 2020, 107 (4), p.2 https://chicagoacs.starchapter.com/images/downloads/Chemical_Bulletin/2020_04_chembull.pdf
- Lerman, ZM; **Zajdela, ER** *Malta conferences use science diplomacy as a bridge to peace in the Middle East*. The Nucleus, April 2020, 98 (8), p. 5. https://www.nesacs.org/pub_nucleus/2020/Apr20NUCLEUS.pdf

Zajdela, E.R. SPOTlight: Science Diplomacy in the Middle East. *Science Policy Outreach Taskforce Newsletter*, December 2019. <https://cpb-us-e1.wpmucdn.com/sites.northwestern.edu/dist/0/3810/files/2020/04/December-Newsletter-2.pdf>

MEDIA

March 2022: Interview published in Advanced Science News: “Computer model determines how conferences can be primed for collaboration” <https://www.advancedsciencenews.com/computer-model-determines-how-conferences-can-be-primed-for-collaboration/>.

March 2022: Published in Science 2.0, “Science Conferences Are Worth Your Time, But You Don’t Need To Create Emissions Traveling To Them To Benefit”, https://www.science20.com/news_staff/science_conferences_are_worth_your_time_but_you_dont_need_to_create_emissions_traveling_to_them_to_benefit-255985

March 2022: Published in Consumer Affairs, “Virtual and in-person conferences are valuable collaborative tools, study finds,” <https://www.consumeraffairs.com/news/virtual-and-in-person-conferences-are-valuable-collaborative-tools-studyfinds-031522.html>

March 2022: News release “Are conferences worth the time and money?”

- AAAS’s EurekAlert! <https://www.eurekalert.org/news-releases/946347>
- Northwestern Now: https://news.northwestern.edu/stories/2022/03/are-conferences-worth-the-time-and-money/?utm_source=pardot&utm_medium=newsletter&utm_campaign=news-junkie&utm_term=organic

August 2021: Featured in the Northwestern Graduate school spotlight series: <https://www.tgs.northwestern.edu/about/our-people/spotlight/emma-zajdela.html>

April 2021: Interview featured in the cover story of McCormick Magazine in the article “McCormick Where We are - Though physically separated, we united to meet COVID-19 challenges with creativity and support.” <https://www.mccormick.northwestern.edu/magazine/spring-2021/where-we-are/>

March 2020: Articles about my team winning the 2020 Supply Chain Data Analytics competition hosted by Loyola Quinlan School of Business and the Northwestern University Transportation Center, in partnership with Redwood Logistics and FreightWaves:

- <https://www.luc.edu/supplychaincenter/about/news/dataanalyticscompetition2020.shtml>
- <https://www.mccormick.northwestern.edu/applied-math/news-events/news/articles/2020/maher-said-data-connect.html>

September 2019: “Zajdela Visits Malta Participants in Egypt” and “Zajdela Meets U.S. Representative Jan Schakowsky” published in the Malta Conferences Foundation Newsletter. <https://www.maltaconferencesfoundation.org/newsletters>

LEADERSHIP AND SERVICE

American Physical Society (APS), member	2020-present
Elected Student/Postdoc representative to the Group on Statistical and Nonlinear Physics (GSNP)	March 2022
Chair, GSNP Social Media and Communications Committee	2023-present
Society for Industrial and Applied Mathematics (SIAM)	2017-present
Vice-President, Northwestern University chapter	2021-present
Treasurer, Northwestern University chapter	2020-2021
Representative to the department, Northwestern University	2019-present
Organizer, “Bridging the Gap” seminars at Northwestern	
Organizer, Chicago Area SIAM Student Conferences (2017, 2018, 2019, 2020, 2021, 2022)	
Treasurer, University of Illinois Chicago chapter	2017-2018
Science Policy Outreach Task Force (SPOT), Board member-at-large	2022-present
Science Diplomacy chair	2019-2022
SPOT awarded the <i>Winter 2021 Wildcat Impact Award for Innovation</i>	2021
Founder and Organizer, Science Diplomacy Lecture Series	2020-2021

Organizer, Science Policy Communication in the Age of COVID-19 Workshop Series

Winter 2021

Association for Women in Mathematics (AWM), member

2017-2021

National Science Policy Network (NSPN), member of the Science Diplomacy committee

2020-present

Journal Referee

2022

- Proceedings of the National Academy of Sciences (PNAS)
- Journal of Statistical Mechanics (JSTAT)
- European Physical Journal Data Science (EPJ Data Science)

TEACHING EXPERIENCE

Faculty for the Complexity Global School, Santa Fe Institute

December 2023

- Taught 30 students from 15 African countries in-person and 30 students from India and Nepal virtually

<https://www.santafe.edu/info/2023-complexity-global-school/faculty?passKey=5e453325-48ec-415b-b96d-ff3c7ee42931>

Teaching assistant for Social AR/VR Studio, Computer science department, Northwestern University

Spring 2023

- Primary teaching assistant for **116 students** (mean student rating **5.5/6**)

PRESENTATIONS & CONFERENCES

- **Modeling the Dynamics of Scientific Collaboration at Conferences**

December 2023, Invited lecture, “Scientific collaboration for sustainable development,” Santa Fe Institute Complexity Global School, Bushbuckridge, South Africa.

September 2023, Invited lecture, “What’s in a Team? Modeling the Genesis of Collaboration at Virtual and In-Person Conferences,” Santa Fe Institute’s “Lake City Sustainable Societies,” Lake City, SC.

March 2023, Oral presentation, “Physics of social interaction at virtual and in-person conferences: a model for the formation of scientific collaborations,” American Physical Society March Meeting, Las Vegas, NV.

December 2022, Invited panelist, “Is the Middle East more combustible than ever?” Renaissance weekend, South Carolina.

December 2022, Oral presentation, “Catalyzing collaborations: The chemistry of team formation in virtual and in-person settings,” African Conference on Research in Chemistry Education (ACRICE), Ain Shams University, Cairo, Egypt.

November 2022, Poster presentation, “Catalyzing Scientific Team Formation at In-Person and Virtual Conferences,” The Third Middle-Eastern Materials Science Conference, NYU Abu Dhabi Institute, Abu Dhabi, United Arab Emirates.

August 2022, Oral Presentation, “Mathematics Applied to Modeling Team Formation at In-Person and Virtual Conferences: An Academic-Science Philanthropy Partnership,” MAA Session on Mathematical Experiences and Projects in Business, Industry, and Government (BIG), MAA MathFest, Philadelphia, PA.

June 2022, Oral Presentation, “Mathematical Model and Empirical Results for How In-Person and Virtual Conferences Catalyze Scientific Collaborations,” International Conference on the Science of Science and Innovation (ICSSI), National Academy of Sciences, Washington DC.

April 2022, Invited speaker, “Catalyzing Collaborations: Modeling the Dynamics of Team Formation at In-Person and Virtual Conferences,” Dynamics Seminar, Department of Applied Mathematics, CU Boulder.

April 2022, Invited speaker, “Catalyzing Collaborations: A Model for the Dynamics of Team Formation at Conferences,” SIAM Minisymposium on Mathematics of Complex Systems, JMM 2022.

March 2022, Invited Focus Session Speaker, “The Physics of Team Formation: Modeling the Catalysis of Collaboration at In-Person and Virtual Conferences,” APS March Meeting 2022.

January 2022, Contributed Talk, “The catalysis of collaboration: Modeling the nonlinear dynamics of team formation at conferences,” Dynamics Days 2022.

October 2021, Oral Presentation, “Catalyzing Collaborations: The Dynamics of Team Formation at Conferences,” Session on Social Complexity, Conference on Complex Systems, Complex Systems Society, Lyon, France.

September 2021, Invited Speaker, “The Catalysis of Collaboration: Modeling the Probability of Team Formation to Assess the Effectiveness of Science Conferences,” Measurement Evaluation and Learning Shared Interest Group, Science Philanthropy Alliance.

August 2021: Invited Speaker, “Catalyzing Collaborations: A Model for the Dynamics of Team Formation at Conferences,” Building Bridges - Partnerships in Science to Address Health, Environmental Protection and Peace, International Union of Pure and Applied Chemistry (IUPAC) Conference.

June 2021, Splash Talk Presentation, “Catalyzing Collaborations: The Dynamics of Team Formation at Conferences,” 12th Annual International Science of Team Science Conference, International Network for the Science of Team Science (INSciTS).

May 2021, Invited Speaker, “Catalyzing Collaborations: The Dynamics of Team Formation at Conferences,” minisymposium on “Dynamical Systems Approaches for Biological and Cultural Evolution,” SIAM Conference on Applications of Dynamical Systems (DS21).

March 2021, Oral Presentation, “Catalyzing Collaborations: The Dynamics of Team Formation at Conferences,” Session E14: Physics of Social Interaction III, American Physical Society (APS) March Meeting.

March 2021: Lightning Talk, “Catalyzing Collaborations: The Dynamics of Team Formation at Conferences,” Wednesdays at NICO (Northwestern Institute on Complex Systems), <https://youtu.be/AjBOKCTIRpw>.

- **Autonomous Vehicles**

February 2022: Invited Lecturer, “Introduction to Agent-Based Modeling with NetLogo with Applications to Transportation Systems,” Ready for Research workshop series, Northwestern University Transportation Club.

January 2022: Poster presentation, “Accelerating the Adoption of Disruptive Technologies: The Impact of COVID-19 on Intention to Use Self-Driving Vehicles,” The Length and Breadth of Statewide and National Transportation Data, Transportation Research Board Annual Meeting, Washington, DC.

November 2020: Conference organizer and moderator; Oral presentation “Improving Traffic Congestion with Autonomous Vehicles: An Agent-Based Model”, Chicago Area SIAM Student Conference, Virtual.

- **Science Diplomacy and Science Policy**

June 2021, Invited Senior Analyst, “What Answer(s) Science Diplomacy May Have for Iran-GCC Tensions”, Alumni Panel Talk (APT), German Federal Foreign Office’s Training for International diplomats Division.

February-March 2021: Organizer and Moderator, Science Policy Communication in the Age of COVID-19 Workshop Series.

January 2021: Organizer and Moderator, “EU International Cooperation Strategy in Research and Innovation - A contribution to Science Diplomacy”, Online SPOT Science Diplomacy Lecture Series with speaker Dr. Fadila Boughanemi.

https://www.youtube.com/watch?v=6pmca3AG1uM&feature=youtu.be&ab_channel=EmmaZajdela

August 2020: Organizer and Moderator, “Using Chemistry to Catalyze Demilitarization,” Online SPOT Symposium with speaker Dr. Russell Johnson.

June 2020: Organizer and Moderator, “Environmental Law: Public Policy, Science, and Technology,” Online SPOT symposium with speaker James Harrington, JD.

<https://drive.google.com/drive/u/2/folders/15zooLmpw9utd1Xc3JIsshCfNOHyc6J57>

December 2019: Invited by the Board of the Malta Conferences Foundation to attend the Malta IX Conference “Frontiers of Science: Innovation, Research, and Education in the Middle East – A Bridge to Peace”, Republic of Malta.

November 2019: Organizer and Moderator, “Science Diplomacy in the Middle East,” Panel sponsored by the Science Policy Outreach Task Force, Northwestern University. https://www.youtube.com/watch?v=5dAd9fQRdso&feature=emb_title

December 2017: Poster presentation “Studying the Success of Science Diplomacy in Building Trust Among Diverse Communities in the Middle East”, Malta VIII Conference “Frontiers of Science: Research and Education in the Middle East – A Bridge to Peace”, Republic of Malta.

October 2017: Selected as one of eight students to deliver a lightning talk “What Mathematics can Teach us about Science Diplomacy in the Middle East,” NSF Graduate Research Fellow event, Chicago, IL.

- **Game Theory and Poker**

August 2022, Oral Presentation, “When to Hold ‘Em,” Math Circles: Talks about Mathematical Joy, Inspirations, Data-Driven, Lessons Learned, MAA MathFest, Philadelphia, PA.

June 2018: Poster presentation, “When to Hold ‘Em – An Introduction to Probabilistic Game Theory through Poker”, Mean Field Games Summer School, Institute for Pure and Applied Mathematics (IPAM), University of California Los-Angeles (UCLA). Selected & fully funded to attend the summer school.

April 2018: Organizer and Oral Presentation, “When to Hold ‘Em – An Introduction to Probabilistic Game Theory through Poker”, Chicago Area SIAM Student Conference, Illinois Institute of Technology, Chicago, IL

- **Other**

October 2022, Participated in and recorded data on the Scialog Conference on Molecular Basis of Cognition, Research Corporation for Science Advancement, Tucson, AZ.

June 2022, Participated in and recorded data on the Scialog Conference on Signatures of Life in the Universe, Research Corporation for Science Advancement, Tucson, AZ.

April 2022: Organizer, Chicago Area SIAM Student Conference, Illinois Institute of Technology, Chicago, IL.

November 2021: Talk, “The Dynamics of Avatar the Last Airbender,” Student Tea Talk, Engineering Sciences and Applied Mathematics Department, Northwestern University, Evanston, IL

April 2019: Organizer, Chicago Area SIAM Student Conference, University of Illinois Chicago, Chicago, IL.

September 2018: Oral presentation, “Tips and Tricks for Applying to the NSF Graduate Research Fellowship,” first-year seminar, University of Illinois Chicago, Chicago, IL.

January 2016: Attended the Integrated Crop Pollination Project Annual Meeting, Davis, CA.

November 2015: Organized and led an interfaith event following the terrorist attacks in Paris, Beirut, and Baghdad, Loyola University Chicago, Chicago, IL.

OUTREACH ACTIVITIES

Workshop on “Mathematics of Poker” for the Sigma Phi Epsilon fraternity, Northwestern University, November 2023.

Workshop on “Mathematics of Poker” at New Trier High School, Evanston, IL in April 2022.

Panelist for events organized by **Mentorship Opportunities for Research Engagement (MORE)** for Englewood STEM High School (a Chicago Public School) in November 2020 and for the Chicago Math and Science Academy in April 2021.

Designed and ran the **workshop “Mathematics of Poker”**, April 2019 at Splash, an educational outreach program that brings together Northwestern and high school students for a day of teaching and learning, specifically to students in socioeconomically disadvantaged areas.

Member of the **“Applied Math in Action”** outreach team at Northwestern University that aims to spark interest in high schoolers, especially from underprivileged backgrounds, in mathematical modeling through interactive panels and workshops (2018-present).

MATh.en.JEANS, French initiative aiming to introduce middle and high schoolers, especially girls, to math research. Initiated collaboration between University of Illinois Chicago, Northwestern University, and the Lycee Francais de Chicago; Moderated sessions and served as a mentor to the students in Chicago (2018) and San Francisco (2019) for the North-American Congresses: www.lyceechicago.org/blog/mathenjeans-trip-to-san-francisco. (2018-2020)

Sonia Kovalesky Day of the Association for Women in Mathematics (AWM) for middle and high school girls. Ran workshops on the Monty Hall Problem (2017) and Sphere-Packing (2018), University of Illinois-Chicago.

LANGUAGES AND SKILLS

Software: Advanced: **Python** (incl. pandas, seaborn), **MATLAB**, **Maple**; Intermediate: **R** (incl. Shiny), **C** (incl. CUDA and MPI), **Excel**, **LaTeX**; Basic: **SQL**, **MongoDB**, **Bash**, **ffmpeg**, **Tesseract**

Selected graduate courses: High Performance Scientific Computing, Programming for Big Data, Multi-Agent Modeling, Social Network Analysis, Numerical Methods for Random Processes, Models in Applied Mathematics, Nonlinear Analysis, Complex Analysis, Real Analysis

Languages: English and French (bilingual), Spanish (advanced), Arabic (upper-intermediate), Russian (intermediate)

STUDENTS MENTORED

Olga Lew-Kiedrowska – junior, Applied Mathematics and Mathematical Methods in Social Sciences	Summer 2022
Ishaan Narain – senior, BS in Mechanical Engineering, MS in Computer Science	Summer 2022
Jeremy White – freshman majoring in Chemical Engineering	Summer 2022
Andy Wen – sophomore majoring in Computer Science	2019 - 2022
Eleanor Colligan – sophomore majoring in Statistics	Summer 2021 – 2022
Emily Kohlberg – freshman majoring in Computer Science	Summer 2021

TECHNICAL WORKSHOPS

August 11, 2021: Using GPUs with Python by Northwestern IT Research Computing Services.

August 10-11, 2021: XSEDE HPC Workshop - Big Data and Machine Learning by XSEDE with the Pittsburgh Supercomputing Center.

August 9-13, 2021: Next Steps in Python: Introduction to Machine Learning with Scikit-learn by Northwestern IT Research Computing Services.

January 3-5, 2021: Mathematical and Computational Methods for Complex Social Systems, American Mathematical Society (AMS)

Summer 2020: Bring Your Own Data (BYOD) Working Group for Researchers organized by Northwestern Research Computing Services.

June 18-29, 2018: Graduate Summer School: Mean Field Games and Applications, Institute for Pure and Applied Mathematics (IPAM), University of California Los-Angeles (UCLA). Selected & fully funded to attend the summer school.

HOBBIES

Violin, piano, judo, [math-art](#), traveling to discover new languages and cultures