2023-2024 Newsletter

Department of
Statistics and Data Science

Chair's Note

Dear colleagues, students, and friends,

As we look back on an exciting and productive year, I am thrilled to share some key updates and achievements within the Department of Statistics and Data Science. The past year has seen significant developments in our academic programs, faculty research, and student accomplishments, and I am proud of how our department continues to grow and evolve.

One of the most exciting developments is the enhancement and enrichment of our graduate and undergraduate curriculum in data science and machine learning. With the recent addition of new faculty specializing in those areas, we are now offering even more comprehensive coursework in these cutting-edge fields. We remain committed to providing our students with the latest tools and knowledge to excel in this fast-growing area, and we look forward to continuing to expand our course offerings in the coming academic year.

In support of our faculty's research endeavors, the Department has invested in the latest technology GPU cluster to facilitate cutting-edge research in data science and artificial intelligence (AI). This new resource enables our faculty to push the boundaries of research in these dynamic fields and ensure that we remain at the forefront of innovation. The Department is deeply committed to supporting faculty research in leading areas, and we are confident that these resources will help our faculty achieve even greater success.

Promoting student research and academic achievement is also a central focus of the Department. This year, we established the Doctoral Qualifying Exam Alumni Award, made possible through the generous support of our alumni. We are delighted to recognize Samuel Ozminkowski (PhD program) and Duruo Li (MS program) as the first recipients of this award. We are incredibly grateful to our alumni for making this award a reality and for their continued generous support to our students' success. We also established a Department travel award for our graduate students, enabling them to present research work in conferences and to share their research with the broader academic community and engage with peers and leaders in their fields. Additionally, we are excited to announce that we expect to soon be launching a new initiative to promote undergraduate research experiences, which will provide opportunities for our undergraduates to engage in independent research projects under the guidance of our faculty.

The Department has established a sequence of professional talks, inviting alumni to share their industry experience and insights into career opportunities. These seminars provide students with valuable exposure to real-world applications of statistics and data science, allowing them to gain a deeper understanding of potential career paths. Hearing directly from professionals who have successfully transitioned from academia to industry helps students shape their academic journeys, guiding them in course selection, skill development, and networking strategies. By engaging with alumni, students can better align their studies with industry demands, strengthen their practical skills, and gain the confidence and connections needed to achieve their career goals.

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Chair's Note (continued)

Our PhD program continues to expand, and in September 2024, we will welcome eleven new PhD students. The integration of data science into our PhD curriculum, along with the introduction of a take-home applied qualifying exam, has modernized our approach to graduate education, ensuring that our students are well-prepared for the challenges and opportunities ahead.

Our terminal MS in Statistics program, launched in 2022, has already had a significant impact, with many of our graduates securing industry positions or pursuing further academic studies. We are excited to welcome 27 new MS students this fall, along with four combined BA/MS students.

The Ad Hoc Masters in Applied Statistics program continues to attract students from various disciplines, further strengthening our interdisciplinary focus. We are proud of the accomplishments of our graduates and their contributions to both academia and industry.

Finally, our undergraduate programs remain strong, with data science becoming one of the largest programs on campus. We are dedicated to enhancing the student experience through new course offerings and opportunities for research and professional development.

Thank you to all of our faculty, students, alumni, and supporters for your continued dedication and hard work. I look forward to another year of growth and achievement as we continue to build on our successes.

Best regards,

Ji-Ping Wang
Professor and Chair
Department of Statistics and Data Science

Faculty News

Kaize Ding

Kaize Ding won the AAAI New Faculty Highlights award at the Association for the Advancement of Artificial Intelligence (AAAI) in December 2023.

Kaize was also the recipient of an Amazon Research Award in August 2024.

Faculty News

Beth Tipton

Within the past year, Beth Tipton was elected as a Fellow in both the American Statistical Association and the American Education Research Association.

Additionally, Beth delivered the Keynote at CLeaR (Causal Learning and Reasoning) Conference at UCLA in April 2024.

Sandy Zabell

Since 2020, Sandy Zabell has been a member of the NIST Expert Working Group on Human Factors in Forensic DNA Interpretation, a joint National Institute of Standards and Technology and National Institute of Justice project. In spring 2024, the Working Group wrapped up its activities, issuing a 411-page report, "Forensic DNA Interpretation and Human Factors: Improving Practice Through a Systems Approach", with Sandy listed as one of the co-authors.

Sandy has been invited to participate in a four-month program on the Modern History of Mathematics to be held at the Isaac Newton Institute in Cambridge, England from January to April 2025. He will be in residence at the INI throughout January.

Sandy has published two papers in the past year, one in Statistical Science with a Dutch colleague E. J. Wagenmakers, and one in Cryptologia (the leading journal for the history of cryptology) with Chris Christensen (of North Kentucky University) about the breaking of JN-25, the primary code of the Imperial Japanese Navy in World War II.

Program News

Data Science (Undergraduate)

Within the past year, nearly 200 students have graduated with either a Data Science minor (146) or major (51)! Given our continued growth, we expect to break the 200 barrier in the coming year. Heading into the fall, there are slightly fewer than 800 students declared as either a Data Science major or minor, and we will certainly exceed 1,000 declared students in the Data Science programs as enrollment picks up throughout this upcoming year. Data Science has quickly become one of the largest programs on campus. It has simultaneously become one of the largest minors and majors on campus, which is unique among undergraduate programs.

The last year saw a new phase in the development of our Data Science course offerings, as we now are starting to pilot new elective courses. Last year we offered 2 special topics courses: Professor Stadie's Deep Learning (in winter quarter) and Professor Ding's Deep Learning on Graphs (in spring quarter). We plan to continue experimenting with more special topics courses over the next few years with the intent of establishing a few standard electives that will be offered on a regular basis. We also plan to maintain an offering of special topics courses to ensure that we continue to be on the forefront of new and exciting topics in Data Science and Statistics.

Looking forward to the upcoming academic year, we are hoping to increase student engagement beyond the classroom with new undergraduate events such as the Department's involvement in the ASA's DataFest. As always, we will continue to monitor our relatively new Data Science programs and work to improve our courses and curriculum to best serve our students and the Northwestern research community.

Statistics (Undergraduate)

Sandy Zabell remains Director of Undergraduate Studies for Statistics (as well as a First-Year Advisor). In the 12 years from 2007 to 2019, the number of Statistics majors and minors grew 15-fold, from 12 to approximately 180. With the introduction of the Data Science Major in the 2022-2023 academic year, it was anticipated that this number would decline somewhat, but in fact there has been only a modest decline (down to around 150 students), and it remains a popular joint major, as well.

Three of our graduating seniors were awarded Departmental honors this year: Victoria Shi (advisor Tom Severini) in Statistics, and Blanka Jarmoszko (advisor Emre Besler) and Erica Zhou (advisor Arvind Krisha) in Data Science. Additionally, Statistics and Data Science double major Gulsimo Osimi was elected to Phi Beta Kappa in the past academic year. Congratulations to Victoria, Blanka, Erica, and Gulsimo, and thanks to Tom, Emre, and Arvind!

One challenge the statistics major and minor both face is the challenge of offering a satisfactory mix of courses given the current staffing challenges. One plan on the horizon is to increase the opportunities for independent research during the summer; alumni who think they might be able to help are encouraged to contact Sandy!

Program News

PhD in Statistics and Data Science

The PhD program is growing! In September 2024, the Department will welcome eleven new PhD students. Additionally, our PhD degree is now in Statistics and Data Science.

The most significant change to the PhD program in the past year is that the applied section of the PhD qualifying exam is now take-home. The students are given a data set with related questions and asked to use their knowledge of Regression (STAT 350), Advanced Regression (STAT 353), and Introduction to Machine Learning (STAT 415) to answer the questions. All PhD students submit written answers and give a presentation for the Department faculty. The theoretical section of the exam, on Statistical Theory and Methodology (STAT 420-1,2,3), is still a closed-book, written test.

And congratulations to recent (Fall 2023) PhD graduates Thomas Ippolito and Tim Tsz-Kit Lau! Tim is currently a postdoctoral researcher at the University of Chicago.

Masters in Statistics and Data Science

Congratulations to our inaugural cohort of 14 MS students and one BA/MS student who joined Northwestern in Fall 2022. Eight graduating students have secured positions in industry in China, and the following six students will pursue their PhD studies starting in Fall 2024:

• Zeqiu Yu (University of Virginia, Computer Engineering)
• Brian Hsu (University of Chicago, Computer Science)
• Shuo (Tansio) Han (Northwestern University, Statistics and Data Science)
• Duruo Li (Northwestern University, Statistics and Data Science)
• Zixuann Wei (Northwestern University, Statistics and Data Science)
• Hejia Liu (University of Minnesota, Information Systems)

 In Fall 2024, we will welcome 27 new Masters in Statistics and Data Science students and 4 combined BA/MS students to the Department.

For the professional development talk series, three Department alumni returned to campus to share their working experience and give advice to current students. We thank the University and Department alumni for their continued support.

Program News

Ad Hoc Masters in Applied Statistics

In 2023-2024, the Ad Hoc Masters in Applied Statistics program accepted six new students. Congratulations to the Ad Hoc Masters graduates from the past year for their hard work! Listed after each name is the student's PhD program.

- Sarah Moore (PhD Political Science)
- Morgan Patrick (PhD Music Theory and Cognition
- Maximilian Weylandt (PhD Political Science)
- Neha Sharma (PhD Operations Management)
- Hanyin Wang (PhD Health and Biomedical Informatics)
- Pilar Manzi Gari (PhD Political Science)
- Alexis Porter (PhD Psychology)
- Eileen Zheng Wu (PhD Psychology)
- Miruna Barnoschi (PhD Political Science)

Alumni News

This year, 2014 Statistics PhD alumnus Cheng Li was promoted to Associate Professor with tenure at the National University of Singapore.

Department Events

Seminar Series and Professional Development Talks

Ming Yuan, Associate Director of the Data Science Institute, Columbia University, presents "Statistical Optimality and Computational Tractability of ICA" on September 29, 2023

Kelvin Shi, 2002 Northwestern MS in Statistics and 2010 PhD in Statistics alumnus, presents "The Biotech and Pharma Job Market for Statisticians: What You Need to Know" on October 6, 2023

Shuguang Huang, 2001 Northwestern PhD in Statistics alumnus and CEO of Stat4ward, presents the professional development talk "How to Prepare Your Career as an Industry Statistician" and meets with graduate and undergraduate students at networking reception on October 10, 2023

Department Events

Seminar Series and Professional Development Talks

Nathan Ross, Associate Professor, School of Mathematics and Statistics, University of Melbourne, presents "Gaussian random field approximation for wide neural networks" on October 27, 2023

Gökçe Dayanıklı, Assistant Professor, Department of Statistics, University of Illinois Urbana-Champaign, presents "A Single level Deep Learning Approach to Solve Stackelberg Mean Field Game Problems" on November 3, 2023

Claire Donnat, Assistant Professor, Department of Statistics, University of Chicago, presents "Sparse topic modeling via spectral decomposition and thresholding" on November 10, 2023

Subhro Ghosh, Assistant Professor, Department of Statistics and Data Science, National University of Singapore, presents "The unreasonable effectiveness of negative association" on November 17, 2023

Department Events

Seminar Series and Professional Development Talks

Sebastien Roch, Professor, Department of Mathematics, University of Wisconsin-Madison, presents "Phylogenomics: Some Identifiability Results" on January 19, 2024

Zachary Seeskin, 2016 Northwestern PhD in Statistics alumnus and Senior Statistician, NORC at the University of Chicago, presents the professional development talk "Statistical Careers with Social Science Research Organizations" on Januay 26, 2024

Zhong Wang, Computational Biologist and Genome Analysis Group Lead, Lawrende Berkeley National Lab and Adjunct Professor, University of California, Merced, presents "From 20GB to 100TB: a journey on the metagenomic road" on February 9, 2024

Kai Zhang, Associate Professor, Department of Statistics and Operations Research, University of North Carolina, Chapel Hill, presents "BET and BELIEF" on February 23, 2024
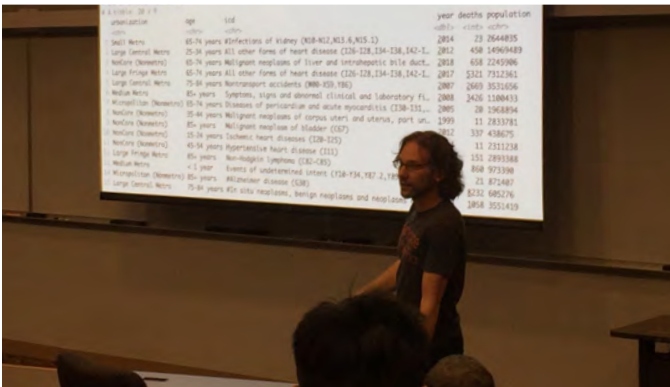
Department Events

Seminar Series and Professional Development Talks

Wanrong Zhu, final-year PhD student, Department of Statistics, University of Chicago, presents "Approximate Co-sufficient Sampling with Regularization" on March 1, 2024

Andrew Gelman, Department of Statistics and Department of Political Science, Columbia University, presents "Audience Choice: Bayesian Workflow / Causal Generalization / Modeling of Sampling Weights" on May 3, 2024

Karl Rohe, Professor Statistics, University of Wisconsin-Madison, presents "T-Stochastic Graphs" on May 10, 2024

Tamara Broderick, Associate Professor, Department of Electrical Engineering and Computer Science, MIT, presents "An Automatic Finite-Sample Robustness Check: Can Dropping a Little Data Change Conclusions?" on May 17, 2024

Department Events

2023-2024 Fall Welcome Picnic

(above and below) The Department of Statistics and Data Science Fall Welcome Picnic was held for faculty and PhD and MS graduate students on Friday, September 22, 2023 in Gillson Park

Giving at Northwestern

As a Department, we accomplish a great deal in partnership with campus friends. Additionally, we are grateful to alumni and other friends who make individual contributions to support our programming, from lectures and symposia to undergraduate and graduate research travel. If you would like to make a gift to the Department, the easiest way to do so is to give online at **www.giving.northwestern.edu/nu/wcas**. You may designate the Department of Statistics and Data Science as the direct recipient of your gift. Thank you for your continued support of the Department of Statistics and Data Science.

Visit Our Website

https://statistics.northwestern.edu/

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