STORies

THE UNIVERSITY *of* **NORTH CAROLINA** *at* **CHAPEL HILL**

STORies

FALL 2023

Editorial team:

Nicolas Fraiman

Ali Mohammad Nezhad

Dear Friends,

Welcome to the 2023 annual issue of STORies. My message in the previous issues of STORies focused on department's past academic year and immediate future. I will deviate slightly from that format in the current issue. As I am starting my 5th and last year as the chair, it is difficult not to look back at my whole 4+ year term from both department and personal perspectives.

The department has grown considerably. With 3 new positions about to open in this academic year, if they are filled, this would bring the total number of faculty hired to 13 during my term. I doubt strongly this was due to my "special" administrative skills. The department has experienced growth very much in response to the spike of interest in statistics, analytics, data science and related fields.

With increasing interest in our disciplines, the department worked to be outward looking and be part of the movement. This included participating in data science initiatives (e.g., undergraduate major and minor) and activities (e.g., career fairs) on campus, often with its other units. This included raising our visibility, as with this newsletter or revamped STOR website, connecting with alumni and industry, as with the STOR Fest about to take place, and so on.

The department has been constantly thinking about improving its curricula across undergraduate and graduate programs. The PhD program was largely unified between statistics and operations research. There is more focus on the MS program, as it was given permission to charge differential tuition. Our undergraduate program has probably experienced and will experience a lot of changes, as we adapt to the changing landscape of our disciplines.

Every chair has not only their opportunities but also their challenges. The COVID peak period was challenging for everyone, to put it mildly. Zoom classes, uncertainty in planning, last minute adjustments, lack of in-person contacts and other emergencies made department's operations difficult for several years. We all hope that this period is largely behind us. Navigating the university politics and personnel issues is part of any chair's job that I discovered, for better or worse, to rely on the on-the-job training.

On a personal level, being the chair has been an invaluable experience and growth opportunity. It has been an honor to serve the department. Anything accomplished would have been impossible without the help and involvement of many graduate students, wonderful staff, dedicated faculty, and the college administration. The fact that the faculty, and by extension their graduate students, are world-class researchers make this department a special place, and any chair's job much easier.

Do continue supporting the department in any way you can! Same holds for the new incoming chair yet to be elected who will be the one writing this message next year.

Sincerely,

VLADAS PIPIRAS
CHAIR

HIGHlights

Dr. Giacomazzo spearheaded the launch of the **UNC Sports Analysis Intelligence Laboratory (SAIL).** The lab firmly believe that sports analytics can be useful in helping athletes and coaches improve performance and gain competitive advantages. It aims to support the university's athletic programs using application-based research in sports analytics. SAIL's diverse data science skills can be useful in extracting innovative insights from the data one regularly collects or the data to which one has access. Through private consulting, SAIL ensures that any discoveries from one's data, remain between the SAIL team and the client.

Amir Dembo
MARJORIE MHOON FAIR PROFESSOR
DEPARTMENT OF STATISTICS & MATHEMATICS
STANFORD UNIVERSITY

The Hotelling Lectures are an annual event honoring the memory of Professor Harold Hotelling, our first chairman. This year we were honored to have Professor Amir Dembo from Stanford University. He is a fellow of the Institute of Mathematical Statistics, and in 2022 was elected to the National Academy of Sciences.

Together with Ofer Zeitouni, he has authored a book on the theory of large deviations which is now a classical reference in the field. His talks were on:

- *Non-linear Large Deviations and Applications.*
- *Sparse Random Graphs with Unusually Large Subgraph Counts.*
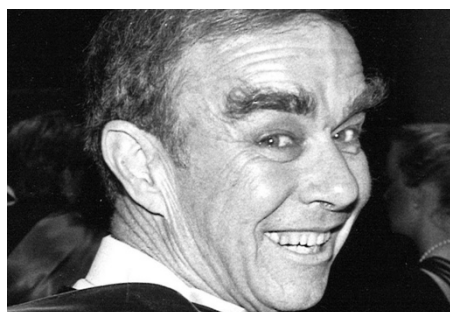
Ross Leadbetter
DECEMBER 1931 - FEBRUARY 2022

A Celebration in Memory of Ross Leadbetter
Extremes, Dependence, and More

We organized a meeting to honor the late UNC Professor Leadbetter on Saturday, February 25, 2023.

The speakers were:

- *Richard Davis* (Columbia University)
- *Ivette Gomes* (Universidade de Lisboa)
- *Tailen Hsing* (University of Michigan)
- *Steve Marron* (UNC at Chapel Hill)
- *Thomas Mikosch* (University of Copenhagen)
- *Susan Murphy* (Harvard University)
- *Vladas Pipiras* (UNC at Chapel Hill)
- *Sid Resnick* (Cornell University)
- *Holger Rootzen* (Chalmers University)
- *Gennady Samorodnitsky* (Cornell University)

GRADUATE PROGRAM

NILAY ARGON

*GRADUATE
PROGRAM DIRECTOR*

I would like to share with you some exciting new developments about our master's program.

Revamped curriculum: To keep up with the ever-growing interest in analytics and data science, the department redesigned the MS program curriculum a few years ago and has been introducing several new upper-level undergraduate/MS courses (e.g., on machine learning, dynamic decision analytics, statistical computing, and deep learning). Before these changes, MS students were taking mostly theoretical PhD-level courses in the department. The recently introduced MS-level courses provide more applied versions of certain PhD-level courses, giving the flexibility to MS students to tailor their coursework towards a more applied or more theoretical program. Our goal is to eventually center the MS program around a new, year-long capstone project course, modeled after the current consulting course in the department.

Projects will be drawn from industry and academic collaborations. The MS program will also provide internship and career placement services to students, another enhancement of the program to make it on par with the peer programs.

Name change: In line with these recent changes to the MS curriculum and focus, the University has recently approved our name change request for the program and the associated degree. Our master's degree is now called **MS in Statistics, Analytics and Data Science (STANDS)**.

School-based tuition: To fund the curricular, staff and student support for the revamped MS program, the Department requested to establish a new school-based tuition of $10,000 per year, which has been recently approved by the UNC Board of Governors. The increased MS in STANDS tuition cost is still on the lower end among comparable programs at public and private peer universities. The revenue from this school-based tuition will be used, among other things, to hire new staff and faculty for the MS program, provide need-based financial aid to MS students, support teaching assistantship positions for MS courses, and provide career services support for MS students.

We understand the competition with peer graduate programs is tough and we need our alumni's support more than ever on this front. In addition to establishing endowments to support graduate students, our alumni can help strengthen our ties with industry through graduate student internships and the capstone-project course. Please contact me directly (nilay@unc.edu) if you would like to support our mission in any possible way. Looking forward to seeing many of you soon at the STOR anniversary celebration events in Chapel Hill!

UNDERGRADUATE PROGRAM
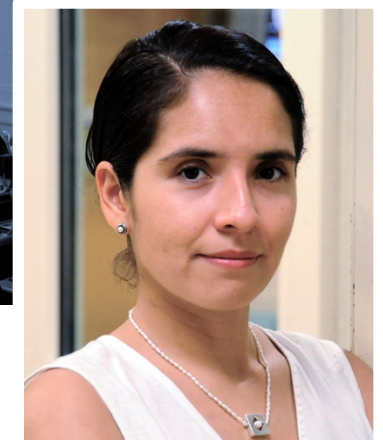
MARIANA OLVERA-CRAVIOTO
UNDERGRADUATE PROGRAM DIRECTOR

Welcome to another academic year at Carolina! If you are new to the STOR department or are thinking of declaring a STAN major or minor, then you will most likely be taking some of our new courses that have launched this semester. New STAN majors are now required to take STOR 315 "Discrete Mathematics for Data Science" instead of STOR 215 "Foundations of Decision Sciences". The new STOR 315 now includes a recitation for you to work on additional problems with the help of an instructor or teaching assistant. Acceptable equivalents for STOR 315, wherever STOR 315 is required, are: MATH 381 "Discrete Mathematics" and COMP 283 "Discrete Structures", although the latter requires a Tar Heel Tracker adjustment. STAN minors are welcome to register for STOR 315 if you plan to take either STOR 415 "Introduction to Optimization" or STOR 435/535 "Introduction to Probability/Probability for Data Science".

We have also launched the new course STOR 235 "Mathematics for Data Science", which is being taught by the Mathematics Department in the Fall and by the STOR Department in the Spring. STOR 235 is a multivariate calculus course meant to be equivalent to MATH 233 for the purpose of completing the requirements of the STAN major. The main difference between STOR 235 and MATH 233 is the focus of the examples. While MATH 233 is inspired by classical applications coming from physics, STOR 235 takes its examples from data science, and places an emphasis on high dimensional problems. We are working with both the Mathematics and Computer Science to streamline the requirements for students pursuing multiple majors.

On a less academic note, we are happy to celebrate this year an important multiple anniversaries of our department. We have called our celebration STOR Fest, and those of you who were STAN students last year helped us create the logos we are using for our event.

As part of our STOR Fest celebration, all our undergraduates are invited to participate in an ice cream social and mini career expo on Tuesday, September 19th, from 3:00 – 5:00 pm at the Carolina Club. You should have received a flyer with information about the companies that will have representatives at the expo and instructions on how to sign up. Don't miss this opportunity to meet STOR alumni and learn about their careers!

Finally, I would like to acknowledge the fact that the event of August 28th may have left many of you unusually stressed, so please know that we are here to help in any way we can. We are a strong community, and we'll continue working to make this a great academic year for you!

I hope to see many of you during our STOR Fest celebration!

DEPARTMENTAL AFFAIRS

CINNAMON WEAVER
BUSINESS OFFICER

Welcome back to Chapel Hill and the Department of Statistics and Operations Research. I hope you had a restful break over the summer and are ready for an engaging and stimulating year. I am excited to be able to tell you that Christine Keat, Danielle Ross, and I hung in there for the 2022-2023 school year. Both Danielle and I celebrated our one-year anniversaries in the department in 2023 and Danielle now has one year under her belt at UNC! I think most notable this past year was making it to the end of the spring semester with what appeared to be a successful commencement ceremony. This was a first for many of us in planning and executing and was a real team effort for staff, students, and faculty. Thank you

to everyone that participated. It was exhilarating to see so many happy graduates with satisfied family members from all over the world. We are now looking forward to STORFest in a couple weeks to celebrate the multiple anniversaries of the department. Check it out below in the newsletter!

It feels wrong to not say something about the events of August 28. I've been on this campus for decades. I raised my children on and around this campus. I made friends, and lost friends here. I have never experienced a day quite like that. My own experience has been a sense of community, sorrow, grief, anger, frustration, strength and community. It's been a process. I feel like we learned a

lot about where we lack in policy, in process and in facilities for safety and care of our community. Thankfully, we also saw where we are strong, how we are brave and that we are supported by the people, communities, and organizations around us. If you feel that you need a hand, don't hesitate to reach out and ask for help. There are multiple resources and individuals on campus who are more than willing to guide you in the right direction. As we all navigate through these unprecedented times, I commend your resilience and determination in adapting to the challenges posed by our present-day experiences.

I wish you all a successful and fulfilling year!

Dhruv Patel
PH.D. CLASS OF 2023

Summing up my STOR experience in a single word, it would be "community." The heart of the PhD journey here lies within the STOR community, an ensemble of kind, caring, and dedicated professors, staff, and students. From engaging in Saturday study sessions at Murphs with his amazing baked goods, to sharing laughter during Shankar's probability class and Sayan's advanced probability. Whether it's grabbing coffee at Meantime or enjoying lunches with professors on the third floor. Those Friday happy hours following graduate student seminars, the conversations spanning various topics with peers in our offices, and the laughs over coffee and tea before colloquiums. The spirited Halloween festivities on Franklin Street and the exhilaration of watching the UNC vs. Duke basketball games with the STOR crowd, followed by running to Franklin when we win. These instances are just a glimpse of the countless cherished memories that have filled my time at STOR. For this, I extend my heartfelt gratitude to STOR.

STORies

Henry Shugart
B.S. CLASS OF 2023

When I showed up to Carolina, I knew I liked math, but maybe not in the "stare at a chalkboard pondering primes" way. I had taken AP stats, so it 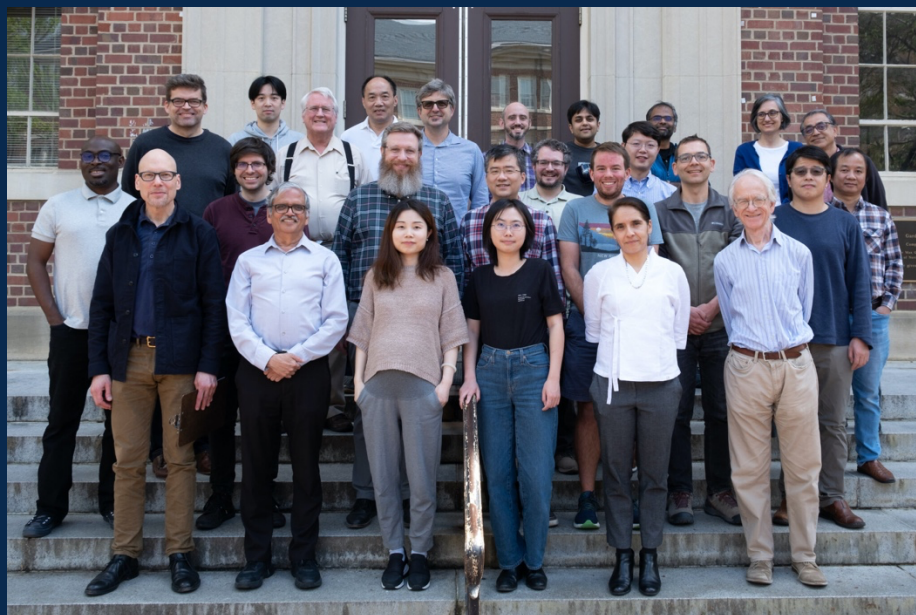seemed like the statistics and analytics major would fit the bill for me. It took me a while, but eventually I stumbled on the OR half of STOR. I got in on the deep end taking the intro graduate stochastics and optimization courses as my welcome to operations research. Even though I felt like a koala for most of that semester, I quickly developed a passion for the subject. Operations research complimented my studies in statistics and machine learning, providing me a deeper understanding of both disciplines. What was originally an afterthought for me when I joined the department ended up being one of my favorite parts about it. I want to thank my thesis advisor Prof. Tran-Dinh for his guidance over the past year and for sparking my curiosity in optimization. It has been my great pleasure getting to know the faculty, staff, and students of the STOR department. As I prepare to start my PhD at Wharton, I know that the lessons UNC STOR has taught me have prepared me well for this journey and whatever comes next. I will look back fondly at my time in Hanes. Go Heels!

Celebrating 75 years of Statistics, 50 years of Operations Research, and 20 years of STOR!

September 17-19, 2023
The Carolina Club

STORFest

CELEBRATING 20, 50, AND 75 YEARS OF STATISTICS & OPERATIONS RESEARCH

STOR fest
1948 1973   2003 2023
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

The current faculty members of the STOR department.

Top row: Pipiras, Chen, Marron, Ji, Hannig, Fraiman, Banerjee, Bhamidi, Argon, Budhiraja.

Middle row: Abayomi, O'Neill, McLean, Zhang, Giacomazzo, Lassiter, Zhang, Ziya, Liu, Tran-Dinh.

Bottom row: Nobel, Kulkarni, Li, Huang, Olvera-Cravioto, Smith.

Absent: Dunn, Pataki.

STORFest

Triple Anniversary Celebration
SEPTEMBER 17 to 19 (CAROLINA CLUB)

This year marks an important milestone for our department: The Department of Statistics celebrates its 75th anniversary, the Department of Operations Research its 50th, and our current STOR Department its 20th!

STORFest is the event to celebrate the triple anniversary.

Web:
https://tarheels.live/storfest/

You and your family are warmly invited to participate in the celebration. The event will include (in)formal presentations, industry panels, and networking. Also, food, drinks, and music!

- **Location:** The Carolina Club on campus.
- **Dates:** Monday, September 18th & Tuesday, September 19th. Mixer in the evening on Sunday, September 17th.

The Department and the University community are still coming to terms with the events of August 28. We hope that the anniversary will be an opportunity to heal among friends, and to begin moving forward.

Organizing committee:
Sayan Banerjee, Quoc Tran-Dinh & Kai Zhang

NEW HIRES

The department is very happy to welcome its new members!

DANIEL KESSLER
ASSISTANT PROFESSOR

Dan completed his PhD in 2023 at the Department of Statistics at the University of Michigan advised by Professor Liza Levina. He is currently an NSF Postdoctoral Fellow at the University of Washington where he works with Professor Daniela Witten. His research interests include the statistical analysis of networks, post-selective inference, high-dimensional statistics, applications involving human neuroimaging, computational and cognitive neuroscience, and high-performance computing. He looks forward to joining STOR in 2024 and will also hold a joint appointment in the School of Data Science and Society.

PATRICK LOPATTO
ASSISTANT PROFESSOR

Patrick studies problems arising from causal inference, high-dimensional statistics, and random matrix theory. He also enjoys making statistics accessible and engaging for students. Patrick received his PhD in mathematics from Harvard University in 2020. He was a postdoctoral member of the Institute for Advanced Study, and he is currently a postdoc at Brown University.
Patrick will join STOR in 2024.

ALI MOHAMMAD NEZHAD
ASSISTANT PROFESSOR

Ali was previously a Postdoctoral Research Associate at the Carnegie Mellon University, and a Golomb Visiting Assistant Professor in the Department of Mathematics at Purdue University, mentored by Professor Saugata Basu. He received his PhD in Industrial and Systems Engineering from Lehigh University in 2018 under the supervision of Professor Tamas Terlaky. Ali's research lies at the intersection of continuous optimization, computational complexity, and real algebraic geometry. Ali has recently developed interest in computational topology and its applications to optimization and machine learning.

POSTDOC FELLOWS

The department is very happy to welcome its new members!

SOUVIK RAY

SCHOOL OF DATA SCIENCE AND SOCIETY (SDSS)

Souvik received his Ph.D. in the year 2023 from Stanford University, advised by Professor Sourav Chatterjee. His research interest lies mostly in the field of probability, in particular random graph and random walk models, optimization problems arising from models in statistical physics and computational geometry, etc. Souvik has also worked in problems from branching processes, combinatorial probability and applied probability models in biostatistics and sports.

PETER RUDZIS

NSF RTG IN NETWORKS

In 2022, Peter received his Ph.D. in Mathematics at the University of Washington, advised by Professor Krzysztof Burdzy. Peter is interested in ergodicity and large-scale behavior of continuous, random dynamical systems which exhibit singular interactions. He has done projects on stochastic billiards, as well as, more recently, rank-based diffusions (a type of Brownian interacting particle system).

GRIGORY TERLOV

NSF RTG IN NETWORKS

Grigory recently graduated with Ph.D. in Mathematics from the University of Illinois Urbana-Champaign advised by Professors Partha S. Dey and Anush Tserunyan. His research lies in the field of Probability Theory and its interactions with Measured Group Theory and Mathematical Physics. A common thread through his research revolves around understanding the interplay between various geometric or structural notions and randomness.

The department congratulates its undergraduate students for their great achievements!

Statistics and Analytics Award

Henry Robert Shugart

Cindy Yang

W. Robert Mann Award

Thomas Mark Drake

AWARDees

The department is very proud of its Ph.D. students for their excellent work!

Outstanding academic performance during first year of PhD studies:

Cambanis-Hoeffding-Nicholson Award

Minji Kim

Seong Jin Lee

Rui Liu

Outstanding teaching performances:

Walter L. Deemer Excellence in Teaching Award

Andrew Ackerman

Sumit Kar

Excellence in Teaching Assistance and Instruction Award

Thomas Keefe

Dilay Ozkan

Panagiotis Andreou

INCOMING PH.D. STUDENTS

Aidan Burchard
University of Florida

chess, soccer, drawing

Nikolaos Dimou
University of Athens

basketball, hiking, reading fantasy books
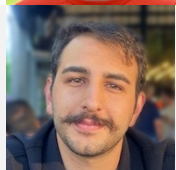
Can Er
Middle East Technical University

board games, photography, fantasy/sci-fi
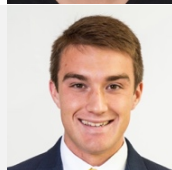
Coleman Ferrell
East Carolina University

running, watching sports, traveling

Xianwen He
UNC Chapel Hill

movies, traveling
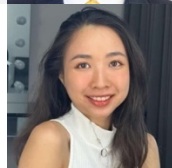
Thanh Ngoc Thanh Ho
University at Buffalo

outdoor activities, ballroom or latin dance

Ethan Ishikawa
Rutgers University

reading, hiking, video games
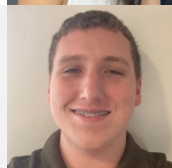
William McCance
University of California, Santa Barbara

singing, swimming, and fishing

John Mieszczanski
Bates College

running, soccer, table tennis, hiking
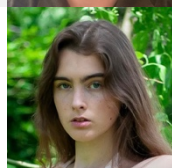
Anna Myakushina
University of Rochester

figure skating, creative makeup, vinyl records

Duc (Andrew) Nguyen
Kenyon College

reading, comedy, politics
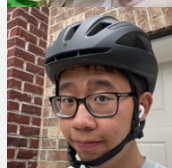
Renyu Rao
Columbia University

badminton, biking, ping pong, games

Ishmael Benjamin Torres Aguilar
Instituto Politecnico Nacional

working out, making trap beats
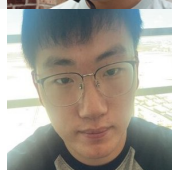
Yikai Wang
Zhejiang University

ball games, singing, movies, go

Yang Xiang
Tsinghua University

tennis, reading
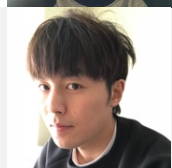
Yang Xiao
UNC Chapel Hill

anime, tennis

INCOMING M.S. STUDENTS

Jianhan Cheng
University of Washington

various sports, fitness, video games

Malavika Vasudevan Mampally
St. Xavier's College (Mumbai)
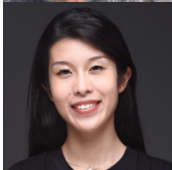
badminton, learning languages, art

Alex Rogers
University of California, Berkeley
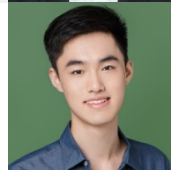
conservation, economics, nature

Yifei Zhang
University of Liverpool

fitness, travel, music

Yuexin Zhang
Rutgers University

traveling, theater, museum

Xinyu (Kenny) Zhang
The Ohio State University

tennis, playing guitar, games, video editing

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Get the preparation that will make you stand
out in the job market.

M.S. in Statistics, Analytics and Data Science (STANDS).

SUPPORT STOR

Private giving is now more critical than ever. We welcome your gifts to STOR, either to our unrestricted fund that provides the Chair the flexibility to apply funding where it is needed most at any given time, or to support our existing fund-raising priorities.

HOW TO GIVE
Online:
https://stor.unc.edu/about/support-us

Mail:
To make a gift via check, please make check payable to "Arts & Sciences Foundation, Inc." with the name of the fund you wish to support in the memo line and mail to:

Director of Development
The Arts and Sciences Foundation
The University of North Carolina at Chapel Hill
523 East Franklin St
Chapel Hill, NC 27514

Remember that matching gifts can double or triple your gift. If you or your spouse works for a matching gift company, please ask your personnel officer for a matching gift form to send in with your gift.

QUESTIONS
For questions about creating scholarships and professorships, making stock or estate gifts, donating to specific programs, please contact:

Director of Development
The Arts and Sciences Foundation
919-843-0345

Department Discretionary Fund
This fund covers activities and initiatives at all levels, including career development, lecture series, stipends, and community outreach.

Graduate Opportunity Fund
This newly created endowment provides support for undergraduate and graduate students in the department who enhance the diversity of the student body of the department, with particular emphasis on graduate student support.

Raj Chandra Bose Graduate Student Travel Fund
This endowed fund through Gary G. Koch and Carolyn J. Koch and friends of the Department of Statistics and Operations Research provides support for graduate student travel.

Dr. Walter L. Deemer Excellence in Teaching Fund
This endowed fund is used to annually recognize and reward teaching excellence of a faculty member and/or graduate student in the department.

Hoeffding Scholarship Fund
Contributions to this fund support scholarship awards to graduate students. Awards are made based on demonstrated academic merit.