



THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS
STATISTICS NEWS

2020-
2021



LETTER FROM THE DEPARTMENT HEAD
T.N. Sriram | Department Head

Dear Alumni and Friends:

As I write this letter, I reflect on the many challenges we faced the past year—as an individual, a department, a university, and a nation. The pandemic, budget cuts, and unexpected loss of faculty members and the Business Manager heavily impacted our instruction and multiple aspects of departmental operations. This time last year, we faced so many challenges that it was easy to become discouraged and pessimistic. Thankfully, four of our faculty members stepped forward to teach extra courses and a team of Franklin College staff provided uninterrupted support through the new Business Services model. We are so grateful to them! As a department, we adapted to new ways of interaction, teaching, research, and administration. Indeed, successful recruitment of three new faculty members and the determination to push the boundaries to embrace new initiatives lifted our spirits and paved promising new avenues to pursue.

Our sustained efforts to promote Data Science initiatives on campus paid off in spades this past year. The number of Data Science majors increased from 28 in Fall 2019 to 77 in Fall 2021, and still counting. The first batch of Data Science majors will graduate in Spring 2022. The pandemic did not dissuade a team of faculty members from Statistics and Computer Science to collaborate virtually and bring to fruition a proposal to introduce a new master’s degree in Data Science. This new degree is currently going through the approval channels, and is slated to begin in Fall 2022. In Spring 2021, we entered another uncharted territory by organizing the inaugural [UGA Data Science Competition](#) jointly with data scientists from Wells Fargo. The competition attracted tremendous response and enthusiasm from UGA students with 96 students participating in 10 undergraduate teams and 16 graduate teams from 25 different programs across campus. Most teams had students from multiple disciplines, making the competition truly interdisciplinary. Industry Day—a celebration of the Data Science Competition with student presentations and a vibrant Career Panel—was held virtually on April 28, 2021. We are indebted to Drs. Vijay Nair and Linwei Hu from Wells Fargo for providing us invaluable guidance, to the eight UGA faculty members and eleven data scientist from Wells Fargo for serving as mentors/judges, and to Dr. Mohamad Al Lawati for sponsoring the competition. Read more about the competition and the Industry day on page 11.

To push the outreach boundaries further, the [Department of Statistics](#) once again

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partnered with Wells Fargo and conducted its inaugural [2021 Data Science and Artificial Intelligence Summer Camp](#) for high school students from July 12 to July 23, 2021. Due to COVID-19 concerns, this camp was held virtually. Within a week of the announcement, close to 60 high school students from Athens and surrounding areas applied to participate in the camp. Due to limitations in resources, we selected a diverse group of 24 high school students to participate in the summer camp. There was no cost for participation. Read more about the 2021 Summer Camp on page 14.

A diverse set of new faculty hires can be transformative, bringing exciting strengths to our department. In Fall 2021, Ting Zhang joined as an Associate Professor, Jialei Chen joined as an Assistant Professor, and Isaac Ocloo joined as a Lecturer. Ting Zhang brings his expertise in nonparametric, semiparametric, and self-normalized inference methods for time series, in combination with his status as a 2019 recipient of the prestigious NSF Career Award, which renders him uniquely qualified to enhance our teaching and research missions. Jialei Chen will open a new statistical data science avenue for us with his expertise in developing engineering-driven data mining methodologies to solve problems in engineering and healthcare. His long-term research plan is to develop holistic physics-based and data-driven frameworks for real-world challenges in the convergence of statistics, artificial intelligence, and engineering mechanics. Isaac Ocloo brings his expertise in developing algorithms for fitting regularized models for high dimensional data with emphasis on selecting a sparse collection of predictors. He will use his expertise to teach a wide variety of statistics and data science courses. Read more about them on page 9.

Much to our disappointment, there were also departures. Longtime faculty members, Cheolwoo Park and Jeongyoun Ahn moved back to Korea. Cheolwoo Park is now a Professor in the Department of Mathematical Sciences and Jeongyoun Ahn is now an Associate Professor in the Department of Industrial & Systems Engineering at the Korea Advanced Institute of Science and Technology (KAIST). Assistant Professor, Justin Strait, left academia and joined the Los Alamos National Laboratory in New Mexico. Business Manager, Kendra Hull, resigned to take a position in Clarke County School District. We thank them for all the years of service to the Department of Statistics.

Faculty members continue to receive special recognition. Dan Hall received the 2021 General Sandy Beaver Excellence in Teaching Award. This award for excellence in teaching annually honors outstanding faculty in Franklin College who have shown a sustained commitment to high-quality instruction. Ping Ma has been appointed as a Distinguished Research Professor. This appointment is one of the highest honors for research afforded to UGA faculty by the institution. Read more about Ping Ma's research accomplishments on page 8.

There were other newsworthy items. During Women's History Month this year, we were honored to feature a recent article by Lynne Billard, "[Women Trailblazers in the Statistical Profession](#)," which provides a historical introduction to remarkable scholars from around the globe. This article appeared in a 2020 issue of the International Statistics Review. Cheng Meng received the 2021 Excellence in Research by Graduate Students in the Mathematical & Physical Sciences award from the Graduate School. Read more about the student awards on page 10.

As always, our achievements are enabled and enhanced by your interest and partnership. We are so grateful to all our donors and friends who have supported us in so many ways. It would be a particular point of pride to have a donor establish an endowed professorship in Statistics. Your donation and continued engagement are important now more than ever as we face the challenges and opportunities that lie ahead.

I thank our departmental members for their selfless contributions to our successes and for their feedback and perspectives that have helped promote new initiatives. I welcome your feedback and invite you to stay connected as we strive for excellence and enhance the impact of UGA Statistics.



UNDERGRADUATE PROGRAM UPDATE

Anne Vencill | Undergraduate Advisor

What a year it has been! We cannot imagine the challenges faculty and staff faced to continue to provide top quality education for our undergraduate statistics and data science majors, as well as statistics minors and others across campus taking statistics courses. Kudos to everyone who made this work and to our students for their patience, resilience, and commitment to the statistics program!

Interest in statistics and data science continues to grow across campus. We have approximately 170 undergraduate statistics majors and approximately 80 data science majors. Our majors are interested in applying statistics to a wide variety of topics: business, sports, public health, politics, theater, and environmental sciences to name a few.

We proudly graduated 36 students, including our first two Double Dawg Pathway participants. Congratulations to all of you on a job well done!!

Our 2021 graduates will soon span the globe working in a variety of fields including: United Nations Peace Keeping Force, piloting drones for the United States Air Force, Korean language training for governmental service, consulting, business analytics, etc. Others will further their education in statistics at places like Columbia University, The Ohio State University, University of Edinburgh, Georgia Institute of Technology, and right here at UGA. We wish them well and hope they will stay in touch!

Finally, a quick shout out to Davis York, Statistics major and Double Dawg, for winning the College Disk Golf National Championship (Individual) this spring!!

GRADUATE PROGRAM UPDATE

Liang Liu and Pengsheng Ji | Graduate Coordinators

It has been a difficult year for all faculty and students. Recruiting well-prepared graduate students and meeting prospective students in-person have become more challenging during the pandemic. We reached out to more than 60 institutions with mathematics or statistics programs including some historically black colleges, and invited their students to attend the two webinars about our programs. We also hosted an information webinar through the ASA Student Chapter at UGA. While the number of applications we received this year was about the same as last year, we received many strong applications from our own undergraduate students. We recruited a total of nine new students with financial support for Fall 2021, of which five intend to pursue a Ph.D. and four want to earn a master's degree in statistics. Three of our new students are domestic, which suggests that our efforts to attract a diverse body of students are showing positive results.

Despite the unprecedented challenges posed by COVID-19, there was an upsurge of innovative and collaborative research conducted by our graduate students. Since last summer, Jialin Yang, Duna Zhan and Yu Wang have been involved in an NSF project on the origin and evolution of COVID-19, collaborating with Dr. Arnold from Genetics and Dr. Bahl from Infectious Diseases. This is just an example of how our graduate students are responding to the pandemic. However, challenges from the pandemic have had a negative impact on student lives. The stress from suspended research projects, uncertain timelines, and missed learning and career opportunities is exacerbated by financial challenges. With help from faculty and staff, the graduate students in the Department of Statistics have managed to survive and strive for success through this difficult time. During the past year, our graduate students showed a strong record of publications in a wide range of scientific fields. A recent graduate, Dr. Cheng Meng, received the Excellence in Research Award—a very competitive award from the Graduate School. Moreover, our graduate students have been successful in finding jobs in the industry or in academic institutions; please click on the link [PhD Alumni and Job Placements](#).

UPDATE: *Colloquium Series*

Qian Xiao, Assistant Professor | Yuan Ke, Assistant Professor | Mohamad Kazem Shirani Faradonbeh, Assistant Professor

During the 2020-21 academic year, the Department of Statistics continued its annual colloquium series with a variety of interesting talks given by regarded speakers in both academia and industry. In the fall, ten speakers were invited, with an emphasis on junior and local faculty with collaborative interests. Talks were given on important statistical research areas such as Statistical Modeling and Optimization, change-point detection, classification, graphic learning, experimental design, and causal inference, with applications in biostatistics, personalized medicine, computer vision and investment. Of particular note was a talk by Dr. Bharath Sriperumbudur (Penn State University) investigating the trade-off between computational and statistical behaviors of approximate KPCA, i.e., whether the computational gain is achieved at the cost of statistical efficiency, as well as one by Dr. Pang Du (Virginia Tech) discussing a new likelihood ratio test statistic for identifying the variance change point detection. Both students and faculty were able to interact with these speakers virtually via Zoom.

There were many interview talks for the two open faculty positions during the first two months of the spring 2021 semester. Six speakers, including a distinguished speaker, were invited after the job talks. Talks were given on important statistical research areas such as, Reinforcement Learning, modeling of COVID-19, experimental design, and multi-class probability estimation. Of particular note was a talk by UGA Distinguished Professor John Drake on "Semi-automated modeling of COVID-19 in the United States." It was the only in-person colloquium (organized at the Athens Botanical Gardens) during the 2020-21 academic year. Both students and faculty were able to interact with the Professor Drake during the talk and the refreshment after the talk. We encourage you to visit the departmental [Colloquium Series](#) website for the most up-to-date information on upcoming talks, presentations, abstracts, and links to guest speakers' websites. Our colloquium series enhances the educational experience of our students, provides research opportunities for our faculty, and enriches the academic environment of the department. If you would like to support this endeavor, please click the link below.

COLLOQUIUM SPEAKERS 2020-2021

FALL 2020

Ming Hu

Quantitative Health Sciences
Lerner Research Institute, Cleveland
Clinic Foundation

Bharath Sriperumbudur

Penn State University

Dr. Pang Du

Virginia Tech

Dr. Ethan X. Fang

Penn State University

Aaditya Ramdas

Carnegie Mellon University

Dr. Yuehua Cui

Michigan State University

Devdutt Yellurkar

Charles River Ventures (CRV)

Yang Feng

New York University

Dr. Wenguang Sun

University of Southern California

Dr. Sheng Li

University of Georgia

SPRING 2021

Qiwei Yao

London School of Economics

Jae-Kwang Kim

Iowa State University

Helen Zhang

University of Arizona

John Drake Odum

University of Georgia

Michael Hamada

Statistical Sciences Group, Los
Alamos National Laboratory

Csaba Szepesvari

University of Alberta

Colloquium Series Website
www.stat.uga.edu/events/past/colloquium-series

Support the Department
www.stat.uga.edu/giving

ASA STUDENT CHAPTER UPDATE

Lynne Seymour, Associate Professor

The American Statistical Association Student Chapter at UGA, or as we call it, the ASA Student Chapter, was established in October 2019. Created as an accessible space for students interested in statistics, our club focuses on three concepts: professional development, academic involvement, and community service. Over the past year and a half of existence, our Chapter has hosted events such as a resume workshop, graduate school information sessions, a student-led discussion on election polling, and various talks sponsored by the ASA Speakers Bureau on topics such as sports statistics (Dr. James Cochran, University of Alabama), the ggplot2 package in R (Dr. Philip Waggoner, University of Chicago), and COVID-19 modeling (Dr. Edward L. Boone, Virginia Commonwealth University). While the beginning of our club centered around navigating the pandemic, we hope that, as we transition back to a more normal college setting, we can improve community involvement, both among students of statistics by reintroducing in-person events as well as with the local Athens community by revitalizing our commitment to service.

BIG DATA ANALYTICS LAB

Dr. Ping Ma, Professor | Dr. Wenxuan Zhong, Professor

The [Big Data Analytics](#) Lab (BDAL) at the University of Georgia (UGA) focuses on the statistical methodology and theory development to face the striking new phenomena emerging under the big data regime. Over the past few years, Dr. Ping Ma and Dr. Wenxuan Zhong have established diverse extramurally funded research programs funded by NSF and NIH, with a total amount over 3 million dollars, to overcome the computational and theoretical challenges that arise from big data analysis. Under the direction of Drs. Ma and Zhong, the lab members have developed many cutting-edge statistical techniques and successfully applied the statistical methods in modern genomic, epigenetic, metagenomics, text-mining, chemical sensing and brain imaging and machine learning research.

Publications:

❖ In 2020-2021, Big data analytics lab published more than 15 papers in peer-reviewed journals and conference proceedings, including The Journal of the American Statistical Association, Biometrika, NeurIPS, Journal of Machine Learning Research, Plant Science, and AISTATS, to name a few.

Outreach and Education:

Education is a key component of the BDAL. In addition to training graduate and undergraduate students, we have significantly focused on high school classroom integration. We have always taken it as one of our priorities to participate in outreach programs targeting students from under-represented groups. For example, our lab members served as volunteers in the UGA Young Dawgs program. The volunteers not only provide professional guidance to the Young Dawgs, but also shed light on how to prepare for post-secondary education and future careers in statistics. In addition to providing internship opportunities to the high school students, Drs. Zhong and Ma supervised more than 5 Ph.D. students and one postdoctoral fellow this academic year.

As for professional activities, from 2020-2021, Dr. Ma was invited to three universities/institutes to give seminar presentations and two conferences [AISTATS 2020 and 2020 Algorithms for Threat Detection (ATD) Annual Workshop] to talk on his current research. Dr. Zhong was invited to two conferences to present keynote talks including the Joint Statistical Meetings and the 11th Cardiovascular Therapeutics Summit Conference.

Lab Honors:

The proposal, *Leveraging Conversational AI to Grow Audience, Deepen Engagement, and Shape Content Strategy*, has been awarded the Innovation Challenge finalists by PILOT, NAB's technology innovation initiative. PILOT is a coalition of innovators, educators and advocates dedicated to advancing broadcast technology and cultivating new media opportunities. PILOT propels broadcast television and radio into the future. It provides a platform for innovation, an engine for incubation, a venue for testing new technologies, and a forum for broadcaster education.

Invited Speakers:

- ❖ Dr. Ming Hu, from Department of Quantitative Health Sciences, Lerner Research Institute, Cleveland Clinic Foundation, gave a presentation "MAPS: Model-based analysis of long-range chromatin interactions from PLAC-seq and HiChIP" on 09/03/2020.
- ❖ Dr. Wenjing Liao, from Georgia Institute of Technology, gave a presentation "Regression of functions on low-dimensional manifolds by deep neural networks" on 03/05/2020.

Completed & Ongoing Grants:

- ❖ National Science Foundation DMS 1925066 to PI Ping Ma for \$415,928.00, from 08/01/2019–07/31/2022: (AY 2020-21)
"ATD: Nonparametric Testing and Fast Computing Methods for Spatiotemporal Models with Applications to Threat Detection"
- ❖ National Science Foundation DMS 1903226 to PI Wenxuan Zhong for \$368,876.00, from 06/15/2019–05/31/2023: (AY 2020-21)
"Collaborative Research: Novel Statistical Tools for Metagenomics and Metabolomics Data"
- ❖ National Institutes of Health R01GM12208 to PI Ping Ma for \$1.4 Million, from 07/2016 – 06/2021: (AY 2020-21)
"Deciphering the Regulatory Role of Small RNAs on Alternative Splicing"
- ❖ Harvard-UGA collaborations on foundations of data science, Teaming for Interdisciplinary Research Pre-Seed Program to PI Ping Ma for \$4,000, from 12/2019 – 12/2020



BDAL Lab Retreat (April 22, 2021)

Individual Development:

- ❖ Dr. Ma, was appointed as a Distinguished Research Professor, effective July 1, 2021. This appointment is one of the highest honors for research afforded to UGA faculty by the institution.
- ❖ Dr. Ma, was awarded NSF Biotechnology-themed Distinguished Lecturer in 2021 by the National Science Foundation.
- ❖ Dr. Zhong presented a keynote talk at the 11th Cardiovascular Therapeutics Summit Conference in June 2020.
- ❖ The former lab member, Dr. Cheng Meng was selected to receive the 2021 *Excellence in Research by Graduate Students Award in Mathematical and Physical Sciences* from the Graduate School.
- ❖ The former lab member, Dr. Jingyi Zhang's paper was selected as one of the winners of 2021 *JSM Best Student Paper Award*.
- ❖ The lab member, Huimin Cheng, won the *Best Beginning Ph.D. student Award* in the Department of Statistics, UGA.
- ❖ The lab member, Ye Wang, won the *Best Senior Ph.D. Student Award* in the Department of Statistics, UGA.
- ❖ The former lab member, Dr. Jingyi Zhang is now Assistant Professor in the Center for Statistical Science, Tsinghua University..
- ❖ The former lab member, Dr. Meng Cheng, is now Assistant Professor in Institute of Statistics and Big Data (ISBD), Renmin University of China.

PHOTOS FROM EVENTS

Professor John Drake's Statistics Club Lecture on COVID-19

STAT 4220 Social Event on Brooks Hall Lawn



CONGRATULATIONS, PING MA!

Effective July 1, 2021, Dr. Ping Ma was recently appointed as a Distinguished Research Professor. Dr. Ma obtained his Ph.D. in Statistics from Purdue University in 2003. From 2003 to 2005, he was a Postdoctoral Fellow in the Department of Statistics and the Bauer Center for Genomics Research at Harvard University. In 2005, he joined the Department of Statistics and the Institute of Genome Biology at the University of Illinois at Urbana-Champaign as an Assistant Professor. He was promoted to Associate Professor in 2011. Through a research excellence target search that targets high-profile faculty members who are truly outstanding scholars and who also demonstrably fulfill critical academic needs, the Department of Statistics at UGA recruited Dr. Ma as an Associate Professor with tenure in 2013. Dr. Ma joined UGA in January 2014.



Upon his arrival in 2014, with the support of the Department of Statistics and the Office of Research, he and Dr. Zhong co-founded the Big Data Analytics Lab (BDAL). The establishment of the BDAL has proven to be a “win-win” journey for the students, the department, the university, and the principal investigators. Six months after Dr. Zhong’s arrival, she received a 1.5 million NIH R01 grant. The Office of Research at UGA generously allocated a 2000 square foot lab space for BDAL in Pound Hall at the Health Science campus. At the beginning, three PhD students from University of Illinois at Urbana-Champaign joined the lab. Lab meetings and journal clubs started right away. Collaborations with other research groups on campus were gradually established. The activities also included joint lab meetings with Professor Ying Xu’s Lab in the Department of Biochemistry and Molecular Biology; joint lab meetings with Professor Tianming Liu’s lab in the Department of Computer Science. These activities kindled students’ minds, nurtured and shaped their thinking, and broadened their vision. Each student in the lab works on at least three interdisciplinary projects. Students are learning to ask questions to get deep into the heart of problems, formulate the problems into analytical questions, and develop the necessary theory and computational methods to answer the questions. These rich activities and trainings have also attracted students from other research groups to the BDAL. For example, Mr. Lexiang Ji from Professor Bob Schmitz’s lab joined BDAL as a rotation student to receive comprehensive training in data analytics. Moreover, students have been working extensively with other faculty members in the department, and have been exposed to a broad spectrum of big data problems ranging from seismic data collected from seismometers monitoring the dynamics of the Earth, twitter data containing rich information of human dynamics, to epigenetic modifications unique to every individual. Many of these have proven to be landmark collaborations, receiving wide recognition. The BDAL students have won the most prestigious student paper competitions organized by the *American Statistical Association* consecutively for the past five years.

Many research projects in BDAL involve super large datasets in terabytes. Computation infrastructure is indispensable to the lab. Dr. Ma was a member of the GARC advisory committee to supervise the deployment of GPU clusters at UGA. The BDAL has consistently requested computational resource from the Extreme Science and Engineering Discovery Environment (XSEDE), which is an NSF-funded virtual organization that integrates and coordinates the sharing of advanced service - including supercomputers and high-end visualization and data analysis resources. Because of the outstanding work, the BDAL has been continuously supported by Pittsburgh Supercomputing Center (PSC). Dr. Xin Xing’s (a former BDAL graduate student) work on metagenomics was featured as a science breakthrough in PSC Biannual Bulletin.

Drs. Ma and Zhong has been continuously funded by federal grants. The students in BDAL receive stipend as graduate research assistants. Students of Drs. Ma and Zhong hold academic positions at leading Statistics/Biostatistics Departments in universities, e.g., University of Minnesota, University of Arizona, University of Illinois at Urbana-Champaign, Virginia Tech, and University of California-San Diego, and University of Central Florida.

WELCOME NEW FACES!

Mohamad Kazem Shirani Faradonbeh, Assistant Professor

Dr. Mohamad Kazem Shirani Faradonbeh joined the Department of Statistics at the University of Georgia in Fall 2020 as an assistant professor of Data Science. He received his PhD degree in statistics from the University of Michigan, Ann Arbor in 2017, and his BSc degree in electrical engineering from Sharif University of Technology, Tehran, Iran, in 2012. From 2017 to 2020 he was a postdoctoral research associate with the Informatics Institute and with the Department of Statistics at the University of Florida. During Fall 2020, he was a fellow of Theory of Reinforcement Learning program in Simons Institute for the Theory of Computing at the University of California - Berkeley.



Isaac Ocloo, Lecturer

Dr. Isaac Ocloo earned his Ph.D. in Statistics from Bowling Green State University, Ohio in 2021. Prior to that, he received an MS in Statistics from The University of Texas at El Paso. He received a B.Sc. in Mathematics from Kwame Nkrumah University of Science and Technology, Kumasi-Ghana. His research interests include High dimensional data analysis and Machine learning. His hobbies are running and playing soccer.



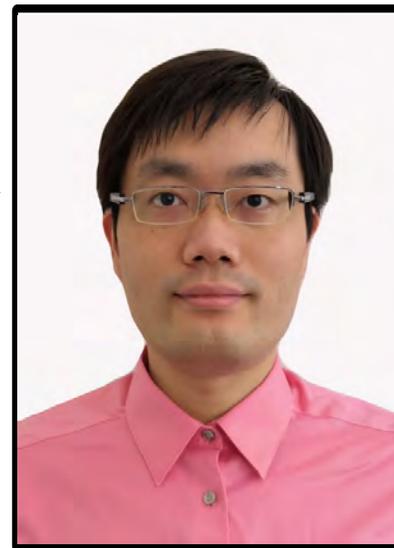
Jialei Chen, Assistant Professor

Dr. Jialei Chen earned his Ph.D. in Industrial Engineering from Georgia Institute of Technology in 2021. Prior to that, he received an M.S. in Statistics from Georgia Institute of Technology and a B.S. in Mechanical Engineering from the University of Science and Technology of China. His research focuses on engineering-driven machine learning methodologies for real-world problems in manufacturing and healthcare. His hobbies include running, hiking, playing tennis, and cooking.

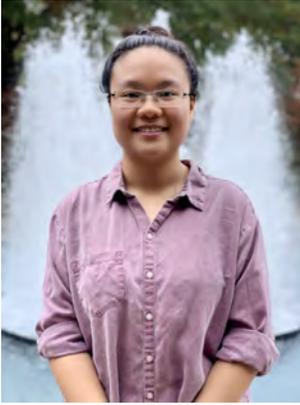


Ting Zhang, Assistant Professor

Dr. Ting Zhang earned his Ph.D. in Statistics from The University of Chicago in 2012. Prior to that, he received a B.S. in Mathematics and Applied Mathematics from Fudan University. Before he joined UGA, he was an Assistant Professor and Associate Director of the Statistics Program at Boston University. He also spent two years at The University of Iowa as an Assistant Professor in the Department of Statistics and Actuarial Science. His research interests include high-dimensional time series, nonparametric and semi-parametric learning, phenomenon of serial tail dependence, and self-normalized automation. His hobbies include cooking, building plastic model kits (Gunpla), and sketching (pencil).



STUDENT AWARDS 2021



Ngoc Nhu Nguyen
Best Master's Student



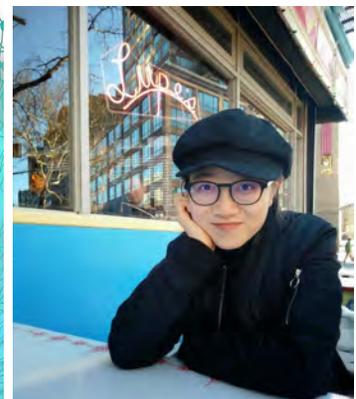
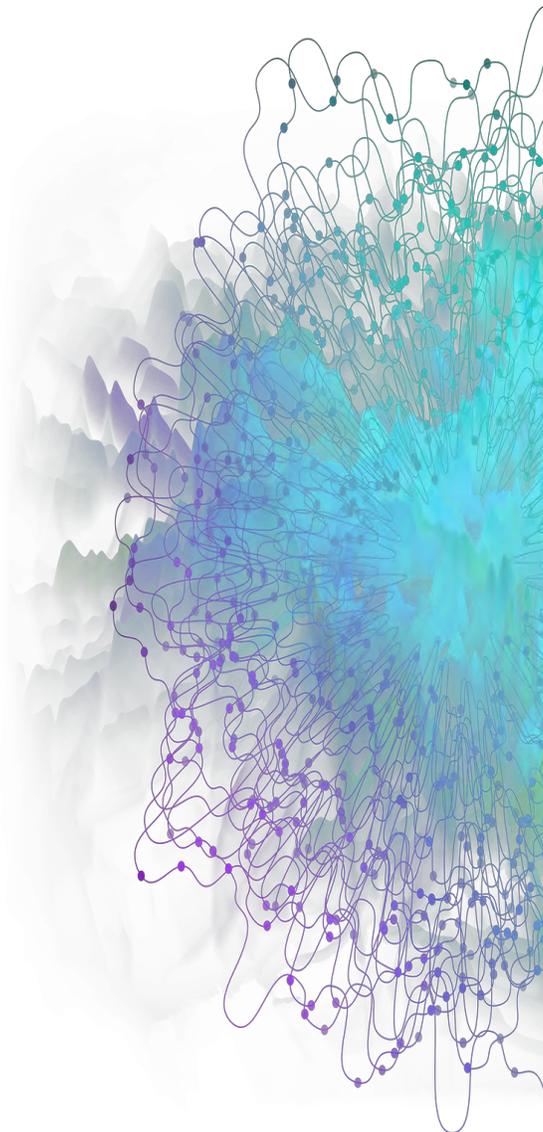
Huimin Cheng
Best Beginning PhD Student



Ye Wang
Best Senior Student



Mengyun Yu
Best Consulting Assistant



Qian Zhang
Best Volunteer Consulting Assistant



Derek Dyal
Outstanding Graduate Teaching Assistant



Cheng Meng
*UGA Excellence in Research by Graduate Students in
Mathematical and Physical Sciences*

2021 DATA SCIENCE COMPETITION

Abhyuday Mandal and T.N. Sriram

In Spring 2021, we collaborated with data scientists from Wells Fargo to organize the inaugural UGA Data Science Competition. The competition attracted tremendous response from UGA students. We had students participating in 10 undergraduate teams and 16 graduate teams from 25 different programs across campus. Each team consisted of three to four students from multiple disciplines, making the competition truly interdisciplinary! The top two undergraduate and graduate teams received cash prizes-- \$2,000 for First Place and \$1,000 for Second Place. We thank Dr. Mohamad Al Lawati (UGA 1990 MS Statistics Graduate) for sponsoring the competition and funding the cash prizes.

The competition involved developing a quantitative model for making credit card decisions by a financial institution. The teams were given simulated datasets that were typical of historical performance of credit card accounts together with credit history information. Each team had to develop two models, one using traditional statistical techniques and another using a modern machine learning algorithm. They had to compare the results from these two methods, select an appropriate one, and use it to develop an algorithm for making accept and decline decisions on credit card applications. The projects were judged based on the quality of the work, the written report, the code, and oral presentation. Each judging panel was composed of two members, one from UGA faculty and a data scientist from Wells Fargo.

After the conclusion of the competition, an Industry Day (see [brochure](#)) was held virtually on April 28, 2021, to showcase and celebrate the Data Science Competition. Following the opening remarks by Provost Jack Hu and Alan Dorsey, the Dean of Franklin College of Arts and Sciences, the top undergraduate and graduate data science teams presented their findings from the competition. Industry Day included a panel discussion on Careers in Data Science from brand executives before awarding the winning undergraduate team, led by Bryce Davis (with team members, Taylor Last, Ted Woodsides, and Anderson Molter), and the winning graduate team, led by Jeevan Jankar (with team members Will Cranford, Dan Luo, and Qian Zhang), for their work. There were two undergraduate teams that tied for the second place and there was one graduate team that won the second place. Two undergraduate teams and three graduate teams received honorable mentions. Please see the full list of awardees on pages 12 and 13.

The Career Panel included Sam Coyne, Director of Artificial Intelligence at Georgia-Pacific; Amil Williamson Data Scientist at Georgia-Pacific; Susan Daniel, Senior Microbiologist at Janssen/Johnson and Johnson; Mary Beth Desper, Environmental Health Safety Specialist at Janssen/Johnson and Johnson; Khalifeh Al Jadda, Director of Online Core Data Science at the Home Depot; and James Pestrak, Senior Data Scientist of Supply Chain at Chewy. Panelists spoke about how they were drawn to data science, shared advice about succeeding in the industry as a successful data scientist, and spoke on the benefits of attending graduate school, among others. We thank them for taking the time to attend the Industry Day and participate in the Career Panel.

Dr. Vijay Nair, one of the industry partners from Wells Fargo, said he was beyond impressed with the work he saw from the students. *"We wondered if this would be too hard, particularly for undergraduate students,"* he said. *"I must say, I'm floored--totally, totally floored by what a great job you guys did, OK?"* Mohamad Al Lawati, who sponsored the event, gave the closing remarks and reiterated how impressive the resulting projects were. *"I want to thank the UGA students for participating,"* he said. *"All of them deserve a lot of credit for their dedication and hard work. I want to extend my warmest congratulations to...the winners of the competition."*

We are indebted to many individuals for their contributions to the inaugural competition and Industry Day. First and foremost, all the students who participated in the competition deserve huge credit for their initiative and excellent performance. 11 Data Scientists (Soroush Aramideh, Linwei Hu, Vijay Nair, Wenhao Pan, Jinwen Qiu, Rahul Singh, Joel Vaughan, Amy Wang, Hui Xian, Shaojie Xu, and Zhanyang Zhang) from Wells Fargo provided tremendous support in formulating the project, providing the simulated datasets, and also serving as judges. Six UGA faculty mentors (Xianyan Chen, Monsur Chowdhury, Dan Hall, Jaewoo Lee, Abhyuday Mandal, and Jaxk Reeves) mentored the undergraduate teams. Eight UGA faculty members (Shuyang Bai, Monsur Chowdhury, Pengsheng Ji, Yuan Ke, Xianyan Chen, Justin Strait, Mohamad Kazem Shirani Faradonbeh, and Qian Xiao) served as judges. We thank all of them for their time and effort that contributed to the success of the event. Special thanks to Dr. Crystal Leach, UGA Director of Industry Collaborations, and members of the Office of Corporate and Foundation Relations (Allison Chesnutt and Stacy Stanford) for connecting us with company executives for the Career Panel.



2021 DATA SCIENCE COMPETITION WINNERS

Undergraduate Teams

Winner



Bryce Davis
Statistics



Taylor Last
Statistics



Ted Woodsides
Statistics



Anderson Molter
Computer Science

Runner-up



Orr Shalev
Data Science



Antoine Nadaud
Mechanical Engg



Noam Kleinman
MIS, Economics



Jacob Salomon
Data Science



Ayush Kumar
Data Science



Faisal Hossain
Computer Science



Chloe Phelps
Data Science

Honorable Mentions

Team 1

1. Will Matray
2. Thomas Hills
3. Patrick Nercessian
4. Hayden Dessommes

Team 2

1. Lauren Rose Wilkes
2. Elise Karinshak
3. Raj Patel

2021 DATA SCIENCE COMPETITION WINNERS

Graduate Teams

Winner



Jeevan Jankar
Statistics



Will Cranford
Statistics



Dan Luo
Statistics



Qian Zhang
Educational Psychology

Runner-up



Zhizhong Lin
Statistics



Yu Wang
Statistics



Xiaochuan Li
Statistics



Mengyun Yu
Statistics

Honorable Mentions

Team 1

1. Twinkle Roy
2. Raghav Goyal
3. Whit Weinmann
4. Chong (Andrea) Zhao

Team 2

1. Jialin Yang
2. Jiacheng Li
3. Weifeng Wang
4. Cheng Chen

Team 3

1. Huimin Hu
2. Duna Zhan
3. Kaiwen Han
4. Yeongmi Jeong

The Department of Statistics partnered with Wells Fargo once again to conduct its inaugural 2021 Data Science and Artificial Intelligence [Summer Camp](#) for high school students from July 12 to July 23, 2021. Due to COVID-19 concerns, this camp was held virtually. The response to the announcement of the camp was overwhelming! We received about 60 applications from high school students all over the world. The co-organizers of the camp, Abhyuday Mandal and T. N. Sriram, selected a diverse set of 23 high school students to participate in the camp. Of the 23 participants, 16 were from Georgia, 3 were from Massachusetts, one was from California, Louisiana, and North Carolina, and one was from New Delhi, India.

Each day, the camp was held virtually from 9 am to 1 pm. Content for each session was developed by Wells Fargo and made available to instructors through GitHub. UGA faculty members, Ray Bai, Yuan Ke, Abhyuday Mandal, Qian Xiao, and Hani Safadi teamed up with seven data scientists from Wells Fargo to deliver the content to the students. In addition, 6 Teaching Assistants, Kaiwen Han, Jeevan Jankar, Ilsuk Kang, Beibei Xu, Mengyun Yu, and Tianyi Zhang, provided the much-needed assistance to the instructors. Students were introduced to Python Programming and a wide variety of Data Science & Artificial Intelligence (AI) topics, such as *Neural Networks*, *Natural Language Processing*, *Machine Learning*, *Deep Learning*, *Reinforcement learning*, and *Generative Adversarial Networks*. After each lecture presentation, students were divided into breakout sessions where they worked in groups to do a variety of hands-on activities. On July 23, each team gave two presentations—one technical and one non-technical. The technical presentation focused on developing Neural Network models for object recognition in low-resolution images with discussions on model outputs, algorithm, and accuracy on testing data. The non-technical presentation was an idea for an AI-based start-up company where they proposed applying one or more of the AI techniques discussed over the course of the camp to a novel application. This was a *Shark Tank*-type presentation. The instructors acted as potential investors with fake dollars and distributed startup funds to the teams. The teams presented ideas to use AI tools to address the following real-world problems:

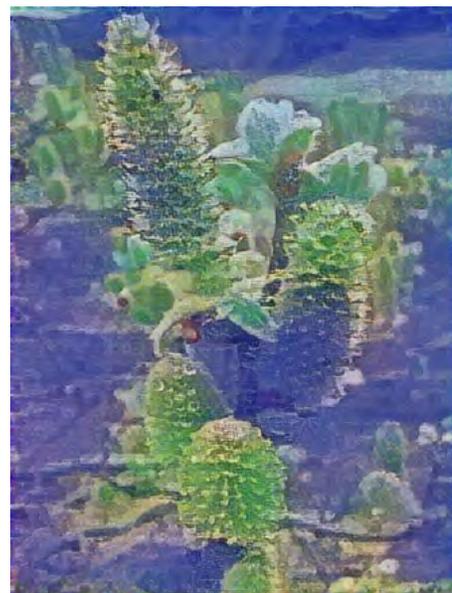
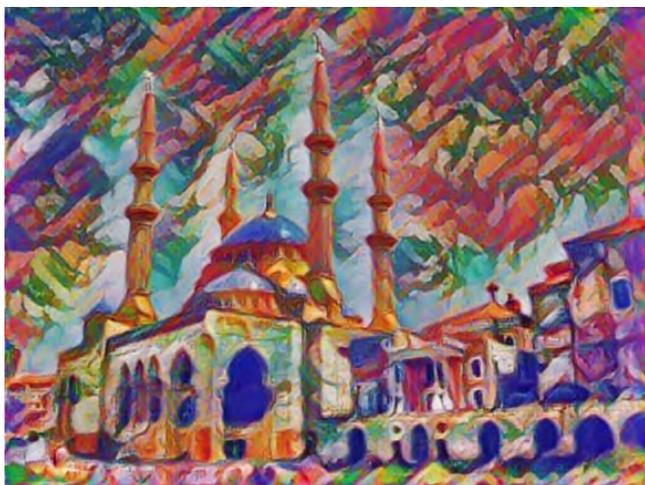
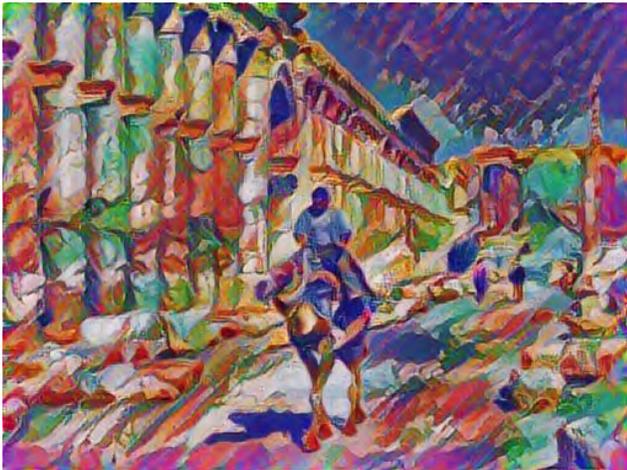
- **Traffic Congestion:** To solve traffic congestion problems, a five-member team proposed to use artificial intelligence to create efficient traffic routes and to offer an alternative model to improve traffic flow.
- **Inclement Weather Prediction:** A four-member team proposed to harness the power of artificial intelligence and machine learning to more efficiently and accurately predict inclement weather conditions.
- **Falcon Automatic Image Reading (FAIR):** A four-member team proposed to use object identification and Convolutional Neural Networks to provide an additional layer in identifying tumors within a specific organ. This project won the first place.
- **AI-based Airport Security System:** A four-member team proposed to create artificial intelligence tools that will aid human security to create a safer environment in airports and planes all around the world.
- **MedNet:** A four-member team proposed to create a mobile app that acts as a General Practitioner, providing patients medical references, connecting them to doctors, as well as providing mental support, so people can conveniently access professional medical care without financial and/or temporal boundaries.

Overall, the summer camp was a tremendous success! Here are some student comments on various aspects of the camp:

- *I really liked how the application process went, as it imitated some sense of "college application" process. The emails were very straightforward and timely.*
- *A wide range of topics were covered in this course from GAN to NLP, and each topic was different yet intriguing in its own way. I also liked that there was a myriad of speakers who each had their own topic to go in depth.*

- *The colabs were able to provide a good level of hands on experience for the topics as we were able to run the codes for ourselves and get our own results.*
- *I liked the team aspect and found that my teammates were super helpful when there was a problem with my code or I did not understand a topic.*
- *I liked the final team project because we were able to get our creative juices flowing. I also liked all of the feedback given by the mentors and orchestrators of each lesson.*
- *I really enjoyed overall and I think that UGA should keep providing this opportunity for students in the future.*

Here are some “[Style Transfer](#)” images that students created using Convolutional Neural Networks (CNN) during the camp. Style Transfer is the process of modifying the style of an image while still preserving its content.





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