

## MSDS Newsletter



### From the MSDS Director

Welcome to the belated Summer 2020 issue of the MSDS newsletter. This is our second newsletter for the MSDS program, and it is my great pleasure to share with you the latest news and activities. The program is in a healthy state, even during the difficult time of COVID-19 pandemic.

First, I would like to introduce Professors Cun-Hui Zhang and Sijian Wang, the new co-directors of the program. I have stepped down as the director on July 1 to serve as the Chair of the Department of Statistics. As you can see from their profiles featured in this issue, Professors Zhang and Wang are world renowned scholars and dedicated teachers. I am confident that the program under their guidance will be even more successful.

I would like to congratulate our Class of 2020 January and May graduates -- all 26 of them. Due to the pandemic, the May graduation ceremony was held online, and we did not have our traditional graduate dinner. Nevertheless, we are proud of the achievements accomplished during their studies in the past two years. We wish them the best of luck in the next stage of their careers.

We also welcome the 39 new students who joined us this Fall 2020. Due to the pandemic, they are all taking classes remotely and some of them are in New Jersey while others are in faraway places such as China and India. Our traditional orientation also moved online; we do miss the picnic and food truck we usually had after the orientation. We are sure they will receive the same quality of education in the new temporary remote environment and we look forward to seeing them on campus once the pandemic is over.

In this issue we feature the orientation held last fall (2019) for class of 2021. Looking at the pictures, we realize how much fun we had in the normal times and how much impact the pandemic has had on our lives. We had the honor of having several excellent practitioner seminar speakers in the last year. They included leaders from Munich Reinsurance and QuaEra Insights. Their interesting, insightful, and informed presentations were well received by our students. We also feature two outstanding members of the MSDS family: current student Shanmukha Srivathsav Satujoda and alumna Boubacar Issoufou Anaroua.

As always, we welcome any comments and suggestions you may have, and will be glad to hear any news from you. Please keep sending us your feedback and please follow our newly launched social media accounts. I wish you and your families all the best and am looking forward to a new exciting academic year.



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## Faculty Profiles: New Co-Director - Cun-Hui Zhang



Professor Cun-Hui Zhang is a prolific researcher who has contributed in many areas of statistics, including statistical inference with high-dimensional data, tensor time series, penalized least squares and compressed sensing, matrix and tensor completion, empirical Bayes, de-convolution, wavelet signal processing, shape constrained inference, functional MRI, microarray data, network tomography, semiparametric and nonparametric methods, survival analysis, sequential analysis, and probability theory. His work impacts a broad range of applications. Professor Zhang is a fellow of the Institute of Mathematical Statistics and of the American Statistical Association. His research has been supported by the National Science Foundation and other government agencies.

Professor Zhang has taught a broad range of topics, including statistical inference, regression, high-dimensional data, semiparametric inference, nonparametric statistics and probability theory. He has extensive experience in collaboration with industrial research groups. He looks forward to getting to know more MSDS students through academic advising and teaching of MSDS courses.

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## Faculty Profiles: New Co-Director – Sijian Wang



Sijian Wang is an associate professor of statistics at Rutgers University. He earned his PhD from the University of Michigan and wrote his dissertation on high dimensional survival analysis. He is broadly interested in complex data analytics, predictive analysis, and data-driven decision making, and has broad experience in applying these methods and ideas to real data and practical problems.

Professor Wang approaches teaching from a pragmatic perspective: he believes in emphasizing concepts, and he tailors his curriculum to introduce students to classical and cutting-edge ideas that are relevant in industrial and business applications. He aims to give students good instincts and intuitions for when and how to apply the best available models and methods. His favorite part of teaching in the MSDS program is the diversity in working experience of the student body. He sees teaching as a two-way street, and always looks forward to learning about interesting ideas and applications from his students.

In his free time, Professor Wang enjoys playing tennis, listening to music, and reading books. He is eager for the new season of *West World* to start.

## Practitioner Seminar Series

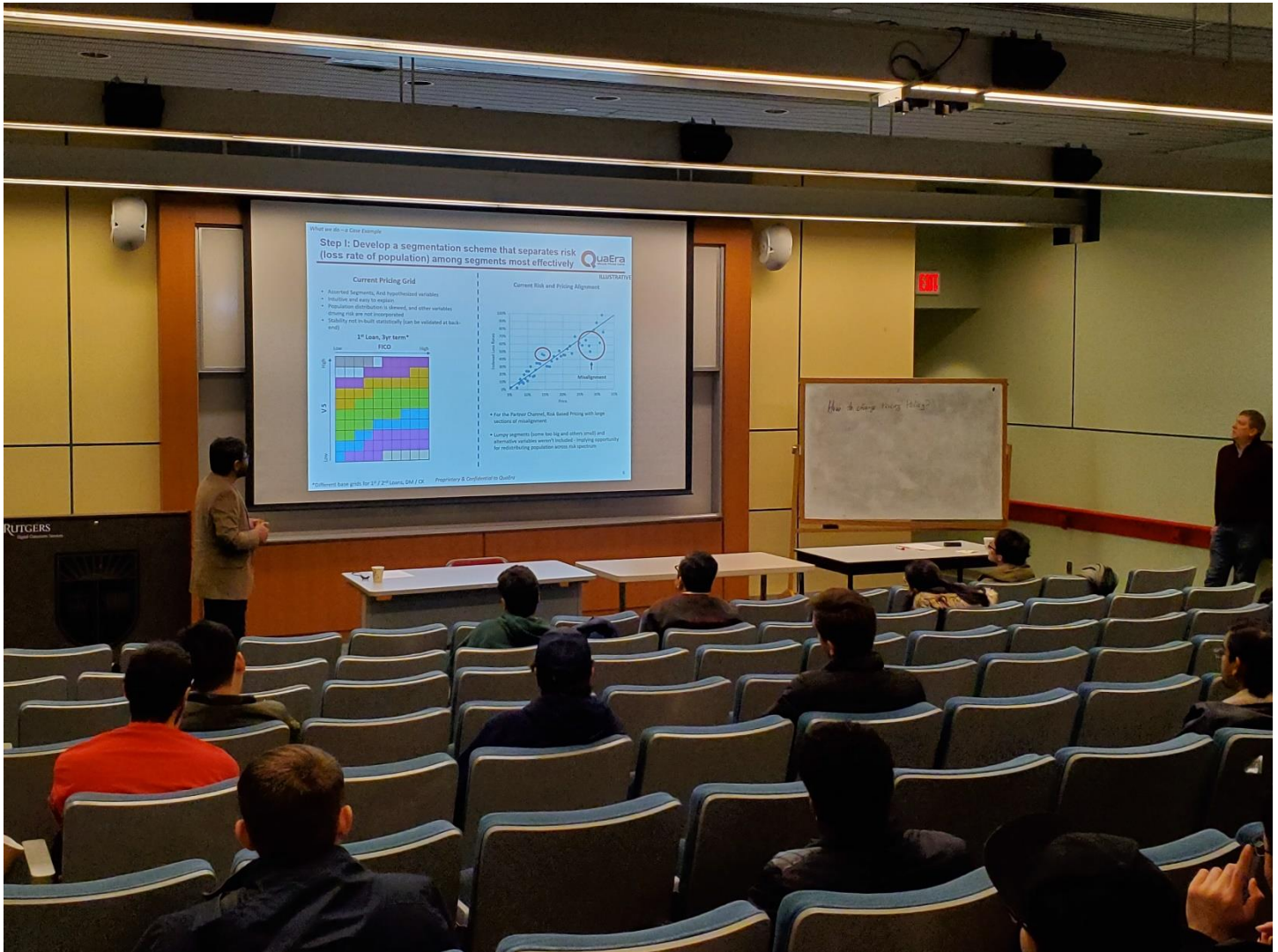


**Andy Kirtland – Munich Reinsurance America** The MSDS program hosted Andy Kirtland, Corporate Leader of Data Analytics at Munich Reinsurance America where his responsibilities cover data and analytic project strategies across the organization. Andy gave a wide-ranging lecture on the evolving use of Data Science in the insurance industry and how to prepare for a role in data analytics during your time in graduate school – particularly in the insurance industry.

Andy is responsible for data and analytic project strategies across Munich Reinsurance America; with focus on Corporate Pricing, Reinsurance, and Specialty Markets. He employs predictive analytics to increase efficiency and segmentation; producing profitable growth and retention for both the organization and its clients. In addition, both predictive and explanatory analysis is used to improve risk management and reserving estimates.

Munich Re is one of the world's leading providers of reinsurance, primary insurance, and insurance-related risk solutions. The group consists of the reinsurance and ERGO business segments, as well as the capital investment company MEAG. Munich Re was founded in 1880 and is active around the globe and operates in all lines of the insurance business.

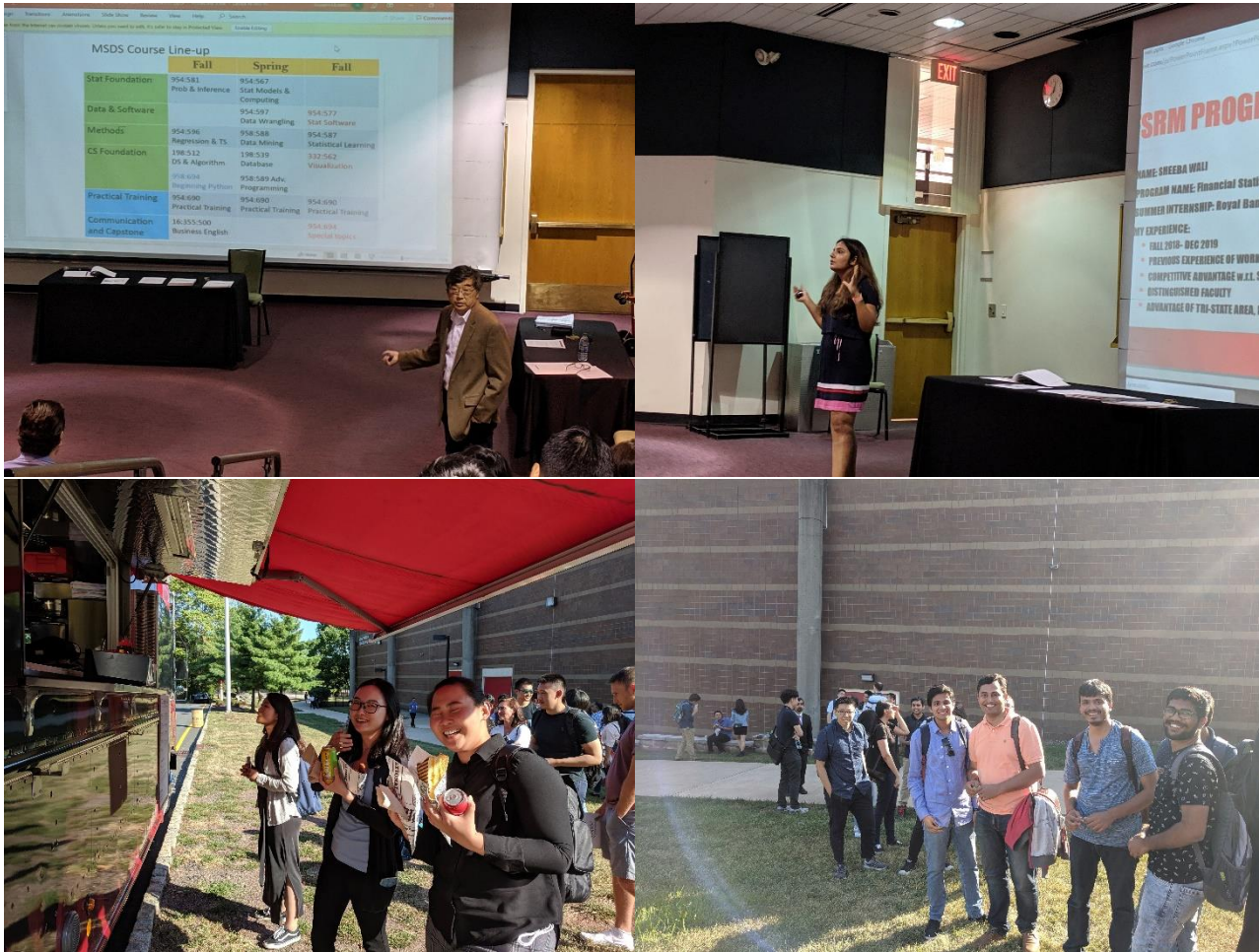
## Practitioner Seminar Series



**Gaurav Gupta, CEO and Founder – [QuaEra Insights](#)** gave a seminar titled “Applying Data Science – Developing a New Risk Model for Personal Loans”. In it, he described how applying data science principles in the business world requires a good understanding of data science and a lot more. He reviewed a real-world case study how QuaEra solved a client’s request to develop and implement a new risk model for personal loans. The talk covered the steps taken from helping the client frame the problem, understand the constraints (both regulatory and business), developing the modeling framework and model building, how testing was designed and performed and finally, the results.

Gaurav founded [QuaEra](#) with an intent to build a world class organization. As a born problem solver, he wanted to create client offerings that solve the toughest problems. He hires the smartest people who can help him transform businesses. Gaurav specializes in consumer banking and credit risk and innovative data science. He started his analytics career at Capital One and has been a senior leader and partner at two consulting firms where he built analytics practices.

## Class of 2021 Orientation



35 incoming MSDS students joined students from the FSRM program in a joint orientation for the incoming cohorts of the class of 2021. Orientation covered an academic course overview, professional development overview and presentations from various support services around the university including University Career Services, Global Services and Library services, among others. Several second-year students shared their experience with the program and described what they did over the summer in their internships. Orientation day ended with an outdoors picnic where students, faculty and staff mingled over food and snacks.



During Summer 2020, the Department of Statistics and Merck's research group collaborated on an exciting student competition dubbed the "Merck Challenge" whereby students grouped in teams would compete to work on one of three real world life science data-related problems.

The Merck research group identified three important and challenging problems:

- Evaluation of Hyperparameter Tunability in Statistical Machine Learning
- Evaluation of Random Projections in Quantitative Structure-Activity Relationship (QSAR) Models
- R/Shiny Application for Loading, Processing and Storing Biological Assay Data

All three problems are motivated by the real practice in drug development and the solutions may have big impacts. Students from the MS in Data Science (MSDS) and MS in Financial Statistics & Risk Management (FSRM) programs were invited to participate in this 12-week challenge. In all, 15 teams competed to work on the three problems and share a monetary award provided by Merck and the Department of Statistics.

For each problem, a senior statistician or data scientist from Merck provided guidance and instructions during weekly remote video meetings. Students provided interim reports of their progress and teams were judged based on their final presentations at the conclusion of the Challenge.

The following are the winners of the inaugural Rutgers Statistics – Merck Challenge:

- 1) Random Projection QSAR: Team: Wei Yuan (MSDS), Wanqing Li (MSDS)
- 2) Hyperparameter Optimization: Solo team (Sean) Yuhsiang Hong (MSDS)
- 3) R shiny app: Team: Chenyue Liao, Xi Cao (MSDS), Yunjiao Bai (MSDS)

## Alumni Profile

Boubacar Issoufou Anaroua (MSDS 2019) is a Data Scientist at JPMorgan Chase & Co in Columbus, Ohio. He was among the first cohort of students of the MSDS program. He is a graduate of African Institute of Technology with a Master of Technology degree and Abdou Moumouni University where he earned a Bachelor of Science in Economics.



### **Tell us about you and what you have been doing since graduating?**

I graduated college with a bachelor's degree in Economics and master's degree in Computer Science in Niger. Since then I have been developing my skills using data to create impactful models for better business decisions. Later on, I continued my journey with Rutgers University and earned my second master's degree in Data Science. After graduation, I had been applying for jobs. At my great surprise, I got hired as a data scientist in the financial industry. Since then, I have been working on

various interesting projects where I get the opportunity to apply my data science background as well as my experience in economics and computer science. I currently work on a regular basis with large amounts of data to support the company's decision-making process.

### **Which professor or what class impacted you the most while you were at Rutgers MSDS and why?**

I enjoyed the time I spent as a student at Rutgers as the school is an admirably open-minded university. This perspective aligns perfectly with my own value system. I am happy and very proud to be remembered as one of the students from the first class of the Data Science program to graduate from Rutgers. I am very amazed that I have met some of the incredibly talented professors. I had experience with Professor Steve Buyske (Data Wrangling), Professor Han Xiao (Regression and Time Series Analysis), Professor Michael LuValle (Probability and Statistics), Professor Dan Yang (Data Mining) and other who are leaders in their fields. I had deepened my knowledge in statistics, data mining, algorithms, probability, statistical learning, computing systems, machine learning, deep learning, coding and data visualization. I greatly benefited from taking those classes. It tremendously impacted my ability to create and integrate computerized tools that improve decision-making in variety of fields to advance quality of life. I had such a diverse group of students from all over the world in my class. Everyone contributed in sharing different ideas and bringing a unique perspective into the program.

### **What do you think is the must-have skill today for someone in your role in your industry?**

Data Science is about finding insightful information from data to answer a particular question. From my perspective, data science is a power that allows businesses and stakeholders to make better decisions. There are a couple of technical and interpersonal skills that I would recommend for prospective data scientists.

Students must have those technical skills such as probability & statistics, data wrangling to clean data for better visualization, programming languages (e.g. Python, R, SAS, SQL), machine learning/deep learning (e.g. k-means, decision tree, XG Boost, neural network, RNN, CNN, regression models, LDA, PCA, Random Forest, and Naïve Bayes), and packages (e.g. scikit-learn, SciPy, TensorFlow, Keras, Pytorch, Numpy, Pandas, Seaborn, Matplotlib).

While these are extremely important, if a student really wants to succeed as a data scientist, he/she will need to also have the right set of soft skills. These skills are not taught, nor are they listed, on most data science courses. In order to navigate through some challenges as a data scientist, students will need to foster excellent communication skills, resilience and grit, creativity and business acumen to succeed. Furthermore, students in the field need to be active listeners, flexible, and very motivated. They must also know how to collaborate to work in a team to achieve a common goal.

**What advice do you have for current and prospective MSDS students?**

You can't repeat another person's experience. Everybody has their own story so what worked for me probably won't work for you. As a data scientist, you'll unquestionably be doing some sort of Machine Learning. So, it may be a good idea to start by collecting data, then get familiar with the data, to identify data quality problems, to discover first insights into the data, or to detect interesting subsets to form hypotheses about hidden information.

## Student Profiles

**Shanmukha Srivathsav Satujoda** is a second-year student graduating in May 2020. He is a Chemical Engineering graduate from Andhra University in India. While pursuing the MSDS degree at Rutgers he held several internships with IFS Securities, Imagine Software, and Audible.

### 1. Where are you headed after graduation?

After accepting a full-time offer from Verisk in its Data Science Excellence rotational program, I am moving to White Plains, New York where I will be working with its subsidiary, Argus Financial, as a data scientist.

### 2. What was your favorite class and why?

I think there were two classes which I really enjoyed, Probability and Statistics, taught by Professor Jason Klusowski, laid a solid foundation for all the other classes.

Bayesian Networks taught by Professor Edwin Green from the department of Ecology and Evolution. I particularly liked this class as Bayesian Networks is one of my favorite subjects and I see a lot of practical applications.

### 3. If you could use two or three words to describe your MSDS experience, what would they be?

Ecstatic, Rewarding and Friends.

### 4. What have you learned that you think will help you most in your career?

For the most important takeaway from the program would be understanding and assimilating different cultures. I am pretty sure we can learn from anywhere, however meeting new people and experiencing new things will change our perspective for the better.

### 5. What is your favorite Rutgers memory?

Haha, dozing off in the library while preparing for a midterm, right after an intense session of snowboarding.

### 6. What advice do you have for current and prospective MSDS students?

Life is always going to be busy; we often lose track of why we started something in the first place. Whenever I felt lost, I would take a moment to slow down, find my reason and then go ahead. Cherish the people and experiences, as we never know when something will end. All the very best.



## Latest News

-After founding the MSDS Program and being its founding Director, Professor Rong Chen will be transitioning to the position of Chair of the Department of Statistics effective July 1 2020. MSDS will have 2 Co-Directors: Professor Cun-Hui Zhang and Professor Sijian Wang who are featured in this issue.

-Rutgers is the top visited university in 2019 by Goldman Sachs' [recruiters according to eFinancialCareers](#). Goldman's recruiters visited Rutgers nine times, likely because it combines the virtues of being close to Goldman's New York City headquarters and its growing New Jersey office.

-Please join the MSDS alumni private group on LinkedIn here <https://www.linkedin.com/groups/4240269/>

-Follow the MSDS program's social media feeds:

Twitter [https://twitter.com/Rutgers\\_MSDS](https://twitter.com/Rutgers_MSDS)

LinkedIn <https://www.linkedin.com/showcase/rutgers-masters-in-data-science/>

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Produced by The Office of Professional Programs  
Contributor: Christopher Geoga  
Department of Statistics  
Rutgers University  
Hill Center, Busch Campus  
110 Frelinghuysen Road  
Piscataway, NJ 08854

Email: [msds@stat.rutgers.edu](mailto:msds@stat.rutgers.edu)