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Dear faculty, staff, students, former students, and friends of the department,

As we navigate through the hot Texas summer, we look back on another successful academic year. Despite facing operational challenges in our department’s integration with the new college comprising 18 diverse departments, we successfully adapted our procedures. This research diversity brought exciting opportunities for collaboration and cluster hiring, and we are proud to take a prominent role in two approved research clusters: Decision Sciences, in partnership with Psychology, Economics, and Philosophy departments, and Measurement Science, alongside Chemistry, Psychology, Biology, Mathematics, and Physics departments. The previous semester witnessed remarkable achievements across various fronts. We excelled in securing external funding, receiving awards, publishing impactful research, and fostering collaborative work.

Particularly impressive was our success in student recruitment, as we saw increased enrollments across all academic levels. This year, we welcomed 95 undergraduate Statistics majors, 8 students in the 3+2 program, 21 on-campus MS students, 90 distance MS students, and 21 Ph.D. candidates, forming a vibrant and diverse academic community.

As we gear up for the Fall 2023 semester and the new academic year, I extend my heartfelt gratitude to our dedicated faculty, staff, postdocs, and students for their hard work and commitment to excellence. Special recognition goes to Judith Moreno for her professional efforts in compiling this issue of StatLinks and capturing most of the photos. Together, we eagerly embrace the future, ready to face new challenges and seize exciting opportunities in our continuous pursuit of excellence in statistical research and education.

Best wishes,

BRANI VIDAKOVIC
H.O. Hartley Chair and Department Head
MEET OUR NEW HIRES

YUCHAO JIANG
Associate Professor

SEONGBAEK YI
Lecturer

YOONSUNG JUNG
Director of Statistical Consulting

ALEX ROITERSHTEIN
Visiting Associate Professor
Moumita Karmakar
Instructional Associate Professor
Effective 9/1/2023

Yang Ni
Associate Professor with Tenure
Effective 9/1/2023

Xianyang Zhang
Full Professor
Effective 9/1/2023
Dr. Arroyo was awarded the TAMIDS Course Development Grant Program for $15,000 to create “Special Topics in Network Data Analysis (STAT 689),” a new graduate course in the department of Statistics.

JESUS ARROYO

Dr. Johnson, Distinguished Professor, received a $350,000 grant from the National Science Foundation for his proposal “Bayes Factor Functions,” submitted to the Statistics Program.

VALEN JOHNSON

Dr. Schafer is among the four 2023 ConocoPhillips Data Science Faculty Fellows at Texas A&M University. She was named a fellow for her contribution to the development and operation of the program.
RAJARSHI GUHANIYOGI

Dr. Guhaniyogi was awarded an ASA Section on Statistics and the Environment (ENVR) 2023 Early Investigator Award. The award is given in recognition of outstanding contributions to the development of methods, issues, concepts, applications, and initiatives within the cross-disciplinary focus of statistics and the environment.

RAYMOND CARROLL

On May 2023, Dr. Carroll attended the University of Illinois Urbana-Champaign’s graduation ceremony where he was the inaugural commencement speaker for the Department of Statistics. Dr. Bo Li, department head of statistics at UIUC is an Aggie and was Dr. Carroll’s student.

YANG NI

Texas A&M University was recently been awarded a new CPRIT center grant for $5,998,422 (for 5 years) titled "Gene-Environment-Lifestyle Interactions in Cancer." Dr. Yang Ni, Assistant Professor, is leading the Single-Cell Data Science Core as a Co-Director.
QUAN ZHOU

Dr. Zhou, sole PI, was the recipient of the NSF CDS&E for his proposal "Next-Generation Tempering Methods for Multimodal Sampling: Theory and Applications," and the NSF Statistics program grant for his proposal "Optimization Of Markov Chain Monte Carlo Schemes with Spectral Gap Estimation."

SHARMISTHA GUHA

Dr. Guha received the 2023 Institute of Mathematical Statistics (IMS) New Researcher Travel Award which funds her travel in order to present a paper or a poster at an IMS sponsored or co-sponsored meeting.

ALAN DABNEY

Dr. Dabney was selected as the recipient of an Open Educational Resources Grant, which will provide support for writing an OER textbook aimed at students in a calculus-based undergraduate introductory Statistics sequence.
Dr. Akleman was recently named a Fulbright U.S. Scholar for 2023-2024 for Turkey (Türkiye). Fulbright Scholar Awards are prestigious and competitive fellowships that provide unique opportunities for scholars to teach and conduct research abroad. Fulbright scholars also play a critical role in U.S. public diplomacy, establishing long-term relationships between people and nations.

Additionally, the eminence of receiving this Pathway Award was recognized by the College of Arts and Sciences and Faculty Affairs through a one-time award of $5,000.

Dr. Laha (PI) was awarded an NSF-DMS Grant for $200,000 for her proposal “Dynamic Treatment Regimes Via Smooth Surrogate Loss: Theory, Methods, and Computational Aspects.”

Additionally, Dr. Laha was selected as the recipient of the 2023 Texas A&M Institute of Data Science Career Initiation Fellow award. As a TAMIDS fellow, Dr. Laha intends to organize a workshop focused on machine learning in healthcare.

Dr. Sang (PI) was awarded an NSF-DMS grant for her proposal "Statistical Modeling of Spatial Temporal Human Mobility Flows from Aggregated Mobile Phone Data."

Additionally, Dr. Sang recently received a contribution to the Sang-Statistics Research Fund which will provide the necessary support for her research efforts.
On May 2nd, 2023, the College of Arts and Sciences proudly celebrated its inaugural class of awardees — exceptional faculty, staff, and students honored for their accomplishments in academics, teaching, research, and service across 15 categories.

The College of Arts and Sciences through its faculty awards recognized and rewarded excellence in the work of faculty. This year, two of our faculty were recipients of CAS awards.

On the upper right corner, Dr. Derya Akleman is receiving the 2023 CAS Inclusive Excellence award. This award recognizes faculty who have made substantial contributions to the University and College’s diversity, equity, and inclusion efforts.

On the left corner, Dr. Yang Ni receiving from Dean Bermudez, the 2023 CAS Faculty Excellence Award, which recognizes faculty who have a multifaceted career trajectory and excel in all three major pillars of academic life: research, teaching, and service/leadership.

Congratulations to our faculty for being the recipients of such meritorious awards!
Ronald R. Hocking was born in Ishpeming on June 4, 1932. He received his bachelor’s degree in 1954 from Michigan Technological University; Master’s in Mathematics in 1957 from the University of Michigan; and PhD in Mathematics and Statistics in 1962 from Iowa State University. During his schooling Ron also served in the United States Air Force from 1954-1956.

Dr. Hocking joined the Statistics department at Texas A&M in 1963 and stayed for 8 years. In 1980 he returned as a Professor. Fourteen years later, he Retired as Professor Emeritus. Dr. Hocking served several roles with the American Statistical Association and is referenced in numerous Mathematical and Statistical Journals.

He published four statistics textbooks, and in 2001, the Department of Statistics at TAMU established the Ronald R. Hocking Endowed Lecture Series from the contributions of Dr. Arseven. The lecture series was designed to celebrate Dr. Hocking’s three-fold development of the theory, teaching, and application of linear models.

Dr. William B. Smith, Professor Emeritus, said "As Ron’s first Ph.D. student, I am deeply saddened with his passing. He was a leader in our chosen field. As one of the our dept’s founding faculty members, he was instrumental in its early successes. He also was well respected as linear models scholar and in the ASA, having served 3 years as Vice President."
Larry J. Ringer was born on September 24, 1937, in Cedar Rapids, Iowa. He was the younger son, by four minutes of Joel and Francis Ringer. Larry and his identical twin, Jerry, grew up in Mount Vernon, Iowa. His life was based on service, faith, and family. He passed away on June 28, 2023.

Dr. Ringer attended received a Bachelor of Science in Mathematics and Master of Science in Statistics from Iowa State University. After graduation, he reported to Fort Sill, OK to fulfill his ROTC commitment. As he was finishing active duty, his professor from Iowa State asked him to join him at Texas A&M University and be the first doctoral student in Statistics.

Dr. Ringer graduated from A&M in 1965 and joined the faculty of The Graduate Institute of Statistics. He taught numerous graduate students and mentored more than 100 doctoral students. Dr. Ringer was Assistant Department Head from 1977-2004 when he retired. He also served as Mayor of College Station from 1986-1996 and as Interim Dept Head from 1986-1987.

Ms. James remembers, "Dr. Ringer (was) always friendly, happy, and smiling. As Assist. Dept. Head, he served with several department heads. He was no doubt the longest Assistant Dept. Head our Department has ever had. He was a legend, and he will be missed."
MEET OUR STAFF

Andrea Dawson  
Academic Advisor III

Penny Jackson  
Program Manager

Elaine James  
Exec. Assistant to the Dept. Head

Judith Moreno  
Sr. Administrative Coordinator I

Bailey Priest  
Learning Support Specialist

Carrie Relles  
Business Coordinator III

Kim Ritchie  
Director of Operations

Athena Robinson  
Business Administrator I

Courtney Shuttlesworth  
Academic Advisor III
In addition to many volunteer roles, Jacob served as a Department of Statistics Student Ambassador, attended a summer research experience for undergraduate students in biostatistics (SIBs), and participated in research supervised by Dr. Guha in our department.

Because of his outstanding academic record and involvement, Jacob Pagel was awarded the "Outstanding Senior Award" at the College of Arts and Sciences awards ceremony. Additionally, Jacob was selected to carry the prestigious College of Arts and Sciences gonfalon at the May commencement ceremony.
In an outstanding display of talent and teamwork, Aliah Vick '25, a student from our department, and Fritz Hesse '25 from ECE, achieved remarkable success in the ASA DataFest competition hosted by SMU Dallas. Not only did they secure the esteemed Best Visualization award, but they also claimed an impressive second place overall.

What makes their achievement even more impressive is the spontaneous decision to participate in the contest. Despite being a team of two competing against larger groups, Aliah and Fritz fearlessly dived into the task, dedicating 22 hours to analyze and sort through a gigabyte of data, ultimately impressing the judges with their innovative solution.

Their remarkable accomplishment stands as a testament to their skills, determination, and collaborative spirit, making the entire department proud of their exceptional performance.

A rising star in the field of statistics, Ethan McDonald '24, has achieved a remarkable feat by co-publishing the paper "Wavelet-based approach for diagnosing attention deficit hyperactivity disorder (ADHD)," alongside esteemed faculty members, H.O. Hartley Chair and Department Head Brani Vidakovic, Associate Professor Scott Bruce, and postdoctoral research associate Dixon Vimalajeewa.

As a dedicated student in the 3+2 B.S. and M.S. Statistics program at Texas A&M, Ethan was drawn to the department for its diverse range of courses, abundant job opportunities, and the close-knit community it fosters.

With aspirations to build a career in the sports industry utilizing his research expertise, Ethan's exceptional achievement exemplifies the outstanding potential and contributions of students in the department, making him a shining example for others to follow.
ISAAC RAY

Isaac Ray, a second-year Ph.D. student, has won an award from the National Science Foundation Graduate Research Fellowship Program (GRFP).

The highly competitive and prestigious GRFP program recognizes and supports outstanding graduate students who have demonstrated the potential to be high-achieving scientists and engineers. NSF will provide three years of financial support including stipends and education allowances to the awardee’s institution.

JIYOUNG PARK

Additionally, both Issac Ray and Jiyoun Park were selected by the NSF for funding as Mathematical Science Graduate Interns! Isaac is working with scientists at Los Alamos National Laboratory on using Bayesian Nonparametrics for doubly unsupervised zero-shot image clustering.

On the other hand, Jiyoun Park is working at the National Institute of Standards and Technology.
Zhao Tang Luo '22, a former Ph.D. student supervised by Dr. Huiyan Sang (chair) and Dr. Bani Mallick (co-chair) was chosen as the finalist for the International Society for Bayesian Analysis (ISBA)'s Savage award.

The Savage Award, named in honor of Leonard J. "Jimmie" Savage, is bestowed each year to two outstanding doctoral dissertations in Bayesian econometrics and statistics, one each in Theory & Methods and Applied Methodology. Up to two awards of $1000 will be awarded.

The ISBA Awards Ceremony will take place at the ASA SBSS reception in the Joint Statistical Meeting, which will be held in Toronto, Canada August 5-10, 2023. If you are attending JSM, be sure to attend the session and shout for Dr. Zhao Tang Luo.

"It is my great honor to be selected as a finalist for the Savage Award. I am deeply grateful to my advisors Dr. Sang and Dr. Mallick for their unwavering guidance and support, and I could not have achieved this without their invaluable mentorship.

I would also like to extend my sincere gratitude to other faculty members in the department, whose courses provided the foundation of my thesis research and contributed greatly to my growth as a statistician. I feel truly fortunate to spend my last five years in this wonderful department and I will always cherish the memories and experiences I have gained here."
Meet C. Shane Reese, a man whose career trajectory took him from accepting his doctoral degree in statistics at Texas A&M University to becoming the 14th president of Brigham Young University (BYU).

In 2001, Shane joined BYU's faculty, commencing a journey that would see him rise through the ranks and earn accolades such as the Young Scholar Award and the Karl G. Maser Excellence in Teaching Award during his 16-year tenure in the Department of Statistics. But this was just the beginning of his ascent.

In 2017, Shane became the dean of the College of Physical and Mathematical Sciences, showcasing his capabilities as an administrator and leader. Two years later, he was appointed as BYU's Academic Vice President, a pivotal role that allowed him to closely collaborate with the university's president, Kevin J. Worthen.

When President Worthen stepped down, it was announced that Shane would be his successor, making him the 14th president of BYU. Shane expressed his gratitude for inheriting a university that was in excellent shape, a testament to the leadership of his predecessor.

On September 19, Shane will be BYU's 14th president during a devotional assembly, which will be broadcast live on byutv.org. As he takes on this new role, one of Shane's primary objectives is to underscore the university's mission statement, which emphasizes human potential and the pursuit of perfection, while staying true to BYU's religious roots.

Shane's vision is centered on supporting students in their pursuit of success by emphasizing both academic enrichment and the university's religious mission. He firmly believes that integrating these two aspects is vital in fostering well-rounded individuals and nurturing future leaders.
Reflecting on his time at both BYU and Texas A&M, Shane acknowledges the transformative experiences at both institutions. Still, he describes his time in Aggieland as particularly instrumental in shaping the success he enjoys today. From his first-year courses to the last, he was impressed by the faculty's commitment to statistics and their dedication to pushing the boundaries of scientific exploration.

Shane credits his time at Texas A&M for setting the standard that he maintains in his current role. “I believe that universities are set up to teach and educate young minds,” Reese said. “That’s part of what makes it exciting to me, so I was grateful for the example of my faculty members at A&M in doing that.”

Perhaps one of the most significant takeaways from Shane’s time in College Station was the lifelong friendships he formed. As he celebrated his appointment as president of BYU, he received warm congratulations from his friends from Texas A&M. This sense of connectedness and camaraderie is something Shane holds dear and seeks to foster at BYU.

“He certainly has the academic and personal qualities that I think are essential to being an outstanding administrator,” Hart said.

Leading an institution with love and passion is easy when one wholeheartedly embraces its mission. For Shane Reese, this mission starts with family, and it will be the guiding force in steering BYU towards a bright and promising future.

In 1989, Dr. Reese arrived on BYU's campus as a freshman and a first-generation college student. After obtaining his bachelor’s and master’s degrees in statistics from BYU in 1995 and meeting his future wife during his time on campus, he ventured to College Station, Texas, to pursue his Ph.D. at the Texas A&M Department of Statistics.
Spectral clustering views the similarity matrix as a weighted graph, and partitions the data by minimizing a graph-cut loss. Since it minimizes the across-cluster similarity, there is no need to model the distribution within each cluster. As a result, one reduces the chance of model misspecification, which is often a risk in mixture model-based clustering. Nevertheless, compared to the latter, spectral clustering has no direct ways of quantifying the clustering uncertainty (such as the assignment probability), or allowing easy model extensions for complicated data applications. To fill this gap, we propose the Bayesian forest model as a generative graphical model for spectral clustering. This is motivated by our discovery that the posterior connecting matrix in a forest model has almost the same leading eigenvectors, as the ones used by normalized spectral clustering. To construct priors, we develop a "forest process" as a graph extension to the urn process, while we carefully characterize the differences in the partition probability. We derive a simple Markov chain Monte Carlo algorithm for posterior estimation, and demonstrate superior performance compared to existing algorithms. We illustrate several model-based extensions useful for data applications, including high-dimensional and multi-view clustering for images.

Biography

Leo Duan is an assistant professor at the Department of Statistics in University of Florida. He holds a joint faculty position at UF Informatics Institute, and is a research affiliate at McKnight Brain Institute. His research focuses on the interface between Bayesian statistics, optimization and combinatorial objects. A main thrust of his recent work pertains to developing new statistical models, via adopting the mathematical objects from the optimization literature and graph theory. Departing from the common usage for algorithm-building, these objects are exploited for inducing useful statistical properties, such as model robustness, structured/constrained sparsity, accommodating varying dimensions, etc. Leo is a profound believer in "using data science for the good", and enjoys collaborations with scientists on issues such as brain disease diagnosis, aerospace exploration and hurricane evacuation.
Edward Kennedy is an associate professor of Statistics & Data Science at Carnegie Mellon University. He joined the department after graduating with a PhD in biostatistics from the University of Pennsylvania. Edward's methodological interests lie at the intersection of causal inference, machine learning, and nonparametric theory, especially in settings involving high-dimensional and otherwise complex data. His applied research focuses on problems in criminal justice, health services, medicine, and public policy. Edward is a recipient of the NSF CAREER award, the David P. Byar Young Investigator award, and the Thomas Ten Have Award for exceptional research in causal inference.

Estimation of heterogeneous causal effects – i.e., how effects of policies and treatments vary across units – is fundamental to medical, social, and other sciences, and plays a crucial role in optimal treatment allocation, generalizability, subgroup effects, and more. Many methods for estimating conditional average treatment effects (CATEs) have been proposed in recent years, but there have remained important theoretical gaps in understanding if and when such methods make optimally efficient use of the data at hand. This is especially true when the CATE has nontrivial structure (e.g., smoothness or sparsity). This talk surveys work across two recent papers in this context. First, we study a two-stage doubly robust estimator and give a generic model-free error bound, which, despite its generality, yields sharper results than those in the current literature. The second contribution is aimed at understanding the fundamental statistical limits of CATE estimation. We resolve this long-standing problem by deriving a minimax lower bound, with matching upper bound obtained via a new estimator based on higher order influence functions. Applications in medicine and political science are considered.
Likai Chen is an Assistant Professor of Mathematics and Statistics at Washington University in St. Louis. She received her Ph.D. degree in statistics at the University of Chicago in 2018. Dr. Chen’s research interests are time series, high dimensional data analysis.

I will present a new inference method for multiple change-point detection in high-dimensional time series, targeting dense or spatially clustered signals. Specifically, we aggregate MOSUM (moving sum) statistics cross-sectionally by an L_2-norm and maximize them over time. To account for breaks only occurring in a few clusters, we also introduce a novel Two-Way MOSUM statistic, aggregated within each cluster and maximized over clusters and time. Such an aggregation scheme substantially improves the performance of change-point inference. We show that our test enjoys power enhancement in the presence of spatially clustered breaks. A simulation study presents favorable performance of our testing method for non-sparse signals. Two applications concerning equity returns and COVID-19 cases in the United States demonstrate the applicability of our proposed algorithms.

**Biography**

Likai Chen is an Assistant Professor of Mathematics and Statistics at Washington University in St. Louis. She received her Ph.D. degree in statistics at the University of Chicago in 2018. Dr. Chen’s research interests are time series, high dimensional data analysis.
Keith Levin is an Assistant Professor in the Department of Statistics at the University of Wisconsin-Madison. Prior to Wisconsin, Dr. Levin obtained his Ph.D. in Computer Science at Johns Hopkins University, and was a post-doctoral researcher in the Department of Statistics at the University of Michigan. His research focuses on statistical methods for network analysis, drawing on techniques from randomized linear algebra, concentration inequalities and probability theory.

Causal inference for observational network data is an area of active interest, owing to the ubiquity of network data in the social sciences. Unfortunately, the complicated dependency structure of network data presents an obstacle to many popular causal inference procedures. In this talk, we consider the task of mediation analysis for network data. We present a model in which mediation occurs in a latent node embedding space. Under this model, node-level interventions have causal effects on nodal outcomes, and these effects can be partitioned into a direct effect independent of the network, and an indirect effect, which is induced by homophily. To estimate these network-mediated effects, we embed nodes into a low-dimensional Euclidean space. We then use these embeddings to fit two ordinary least squares models: (1) an outcome model that characterizes how nodal outcomes vary with nodal treatment, controls, and position in latent space; and (2) a mediator model that characterizes how latent positions vary with nodal treatment and controls. We prove that the estimated coefficients are asymptotically normal about the true coefficients under a sub-gamma generalization of the random dot product graph, a widely-used latent space model. Further, we show that these coefficients can be used in product-of-coefficients estimators for causal inference. Our method is easy to implement, scales to networks with millions of edges, and can be extended to accommodate a variety of structured data.

**Biography**

Keith Levin is an Assistant Professor in the Department of Statistics at the University of Wisconsin-Madison. Prior to Wisconsin, Dr. Levin obtained his Ph.D. in Computer Science at Johns Hopkins University, and was a post-doctoral researcher in the Department of Statistics at the University of Michigan. His research focuses on statistical methods for network analysis, drawing on techniques from randomized linear algebra, concentration inequalities and probability theory.
Semiparametric Inference for Local Extrema of Functions

Local extrema of a function are often the focus in various applications. However, inferring these extrema with noise present can be challenging because (i) the number of local extrema may be unknown, and (ii) the induced shape constraints associated with local extrema are highly irregular. In this talk I will introduce a strategy that eliminates the need to specify the number of local extrema, resulting in a fast and simple Bayesian approach for inference on local extrema. The posterior measure converges to a mixture of Gaussians with the number of components matching the underlying truth, enabling posterior exploration that accounts for multi-modality. Point and interval estimates with frequentist properties will also be provided. The proposed method will be demonstrated through an application to analyzing event-related potentials in cognitive science.

Biography

Dr. Meng Li is the Noah Harding Assistant Professor of Statistics at Rice University. He was previously a Visiting Assistant Professor in the Department of Statistical Science at Duke University. He received his PhD from the Department of Statistics at North Carolina State University. His research focuses on structured high-dimensional and nonparametric inference on complex data with theoretical guarantees and scalable implementation. To this end, he is particularly interested in variable selection, post-selection inference, symbolic regression, nonparametric Bayes, quantile regression, image processing, functional data analysis, and materials informatics. He serves as an Associate Editor of Bayesian Analysis and on the Scientific Oversight Committee of Extracorporeal Life Support Organization (ELSO). He has supervised 8 PhD students and 1 postdoc. His work is funded by NSF, NIH, ORAU, and QuesTek.
Estimating the Error Distribution in Semiparametric Models

I will give an overview of my research on estimating the error distribution in semiparametric models, with emphasis on regression models with independent errors and covariates. My work in this area started with a 2004 paper on efficient estimation of the error variance and other expectations of the error distribution in nonparametric regression. Several papers followed on estimating the error distribution in various semiparametric regression models. In most models a simple uniform expansion of the residual-based empirical distribution function can be derived, if suitable estimators of the regression function are used to form the residuals. The expansion also characterizes efficient estimators of the error distribution function and provides the basis for constructing goodness-of-fit tests, for example distribution free martingale-transform tests about the form of the error distribution.

Biography

Ursula Müller is Professor Emerita of Statistics here at Texas A&M, where she was a full time faculty member from 2006 through 2018. Dr. Müller studied Mathematics in Berlin and earned her doctorate in Bremen. Her research interests include regression and stochastic process models, nonparametric and semiparametric inference, asymptotic efficiency and missing data. Since leaving Texas in 2018, Dr. Müller has held visiting positions in Hamburg and Karlsruhe (both Germany).
Mixed Membership Models for Continuous and Functional Data

Mixed membership models are an extension of finite mixture models, where each observation can belong partially to more than one mixture component. We introduce a probabilistic framework for mixed membership models of high-dimensional continuous and functional data with a focus on scalability and interpretability. We derive a novel probabilistic representation of mixed membership based on direct convex combinations of dependent multivariate Gaussian random vectors/processes. In this setting, scalability is ensured through approximations of a tensor covariance structure through multivariate eigen-approximations with adaptive regularization imposed through shrinkage priors. Conditional posterior consistency is established on an unconstrained model, allowing us to facilitate a simple posterior sampling scheme while keeping many of the desired theoretical properties of our model. Our work is motivated by two biomedical case studies: a case study on functional brain imaging of children with autism spectrum disorder (ASD) and a case study on gene expression data from breast cancer tissue. Through these applications, we highlight how the typical assumption made in cluster analysis, that each observation comes from one homogeneous subgroup, may often be restrictive in BioX applications, leading to unnatural interpretations of data features.

Biography

Dr. Telesca received a Ph.D. in Statistics from the University of Washington and spent two years at the University of Texas M.D. Anderson Cancer Center as a postdoctoral fellow. His research interests include Bayesian methods in multivariate statistics, functional data analysis, statistical methods in bio- and nano-informatics. His work in multivariate Bayesian analysis stems from the application and extension of Graphical modeling techniques to high dimensional ‘omics’ data. Dr. Telesca has pursued issues of model determination from both an applied and theoretical perspective. His interest in highly structured multivariate observations extends to the field of nano-informatics, where he worked on the formulation of Statistical approaches to Quantitative Structure Activity Relationships models. His work in functional data analysis has focused on stochastic models targeting the timing of latent events through time-warping and has seen applications ranging from bio-informatics to criminology. Dr. Telesca is a member of the California NanoSystems Institute and the UCLA Jonsson Comprehensive Cancer Center.
The talk is concerned with random-effects models and their application in experimental science. I will discuss in detail two specific experiments, both involving animal behavior, plus technical matters as they arise in context. The role of experimental design in the formulation of stochastic models will be discussed, with emphasis on the baseline and on the mathematical distinction between covariates and relationships. Technical matters that arise include the following: Covariance functions; Compatibility of factorial models with randomization; REML and likelihood-ratio statistics; Limitations of Wald tests; Fitted versus predicted values. Remarks on software and computation. The talk is based mainly on a forthcoming book titled "Ten Projects in Applied Statistics", but also partly on joint work with Heather Battey at Imperial College, London.

Biography

Metropolis-Hastings requires the choice of a proposal distribution and this choice is crucial to the efficacy of the resulting sampling algorithm. The choice of tuning parameters for the proposal distribution prompted ground-breaking research into optimal scaling and adaptive MCMC methods. Nevertheless, in practically relevant applications this remains a difficult task and is often guided by trial and error. A significant goal is to provide further guidance on this task, especially in high-dimensional, large sample size settings.

Biography

Galin Jones is a Professor and Director of the School of Statistics at the University of Minnesota. His main research interests include Markov chain Monte Carlo, statistical theory and methods in both Bayesian and frequentist domains, and statistical applications in neuroimaging and astrophysics. He earned a PhD in Statistics from the University of Florida in 2001 and is a fellow of both the American Statistical Association and the Institute for Mathematical Statistics. He is currently Co-Editor of the Journal of Computational and Graphical Statistics.
Spatial Scale-Aware Tail Dependence Modeling for High-Dimensional Spatial Extremes

Extreme events over large spatial domains like the contiguous United States may exhibit highly heterogeneous tail dependence characteristics, yet most existing spatial extremes models yield only one dependence class over the entire spatial domain. To accurately characterize "storm dependence" in analysis of extreme events, we propose a mixture model that achieves flexible dependence properties and allows high-dimensional inference for extremes of spatial processes. We modify the popular random scale construction that multiplies a (transformed) Gaussian random field by a single radial variable; that is, we add non-stationarity to the Gaussian process while allowing the radial variable to vary smoothly across space. As the level of extremeness increases, this single model exhibits both long-range asymptotic independence and short-range weakening dependence strength that can lead to either asymptotic dependence or independence.

Biography

Dr. Shaby is an Associate Professor of Statistics at Colorado State University who develops statistical theory and methods to study extreme weather events and high-throughput biological experiments. He works with climate scientists, hydrologists, and wildfire scientists in academia and government to understand and mitigate the risks associated with rare, high-impact events. Dr. Shaby was the recipient of a National Science Foundation CAREER award in 2018 and the American Statistical Association Section on Statistics and the Environment's Early Career Investigator Award in 2016. He completed his Ph.D. at Cornell University in 2009 and held postdoctoral appointments at Duke University and UC Berkeley.
A classical statistical idea is to introduce data perturbations and examine their impacts on a statistical procedure. In the same token, the knockoff methods carefully create “matching” fake variables in order to measure how real signals stand out. I will discuss some recent investigations we made regarding both methodology and theory on a few related methods applicable to a wide class of regression models including the knock-off filter, data splitting (DS), Gaussian mirror (GM), for controlling false discovery rate (FDR) in fitting linear, generalized linear and index models. We theoretically compare, under the weak-and-rare signal framework for linear models, how these methods compare with the oracle OLS method. We then focus on the DS procedure and its variation, Multiple Data Splitting (MDS), which is useful for stabilizing the selection result and boosting the power. DS and MDS are straightforward conceptually, easy to implement algorithmically, and applicable to a wide class of linear and nonlinear models. Interestingly, their specializations in GLMs result in scale-free procedures that can circumvent difficulties caused by non-traditional asymptotic behaviors of MLEs in moderate-dimensions and debiased Lasso estimates in high-dimensions. For index models, we had developed an earlier LassoSIR algorithm (Lin, Zhao and Liu 2019), which fits the DS framework quite well. I will also discuss some applications and open questions. The presentation is based on joint work with Chenguang Dai, Buyu Lin, Xin Xing, Tracy Ke, Yucong Ma, and Zhigen Zhao.
Chattejee's Rank Correlation: What Is New?

In this talk, the speaker will provide a concise overview of the recent progress made in exploring Sourav Chattejee's newly introduced rank correlation. The objective is to elaborate on its practical utility and present several new findings pertaining to (a) the asymptotic normality and limiting variance of Chattejee's rank correlation, (b) its statistical efficiency for testing independence, and (c) the issue of its bootstrap inconsistency. Notably, the presentation will reveal, for the first time, that Chattejee's rank correlation is root-n consistent, asymptotically normal, but bootstrap inconsistent - a rare phenomenon in the literature.

Biography

Dr. Fang Han is an associate professor of statistics, of economics (adjunct) at the University of Washington, and an affiliated investigator at Fred Hutchinson Cancer Research Center. He obtained his Ph.D. from the Department of Biostatistics, the Johns Hopkins University in 2015. His research interest includes rank- and graph-based methods, statistical optimal transport, mixture models, nonparametric and semiparametric regressions, time series analysis, and random matrix theory.
We consider the problem of testing linear hypotheses under a high-dimensional multivariate regression model with spiked noise covariance. The proposed family of tests consists of test statistics based on a weighted sum of projections of the data onto the factor directions, with the weights acting as the regularization parameters. We establish asymptotic normality of the proposed family of test statistics under the null hypothesis. We also establish the power characteristics of the tests under a family of probabilistic local alternatives and derive the minimax choice of the regularization parameters. The performance of the proposed tests is evaluated in comparison with several competing tests. Finally, the proposed tests are applied to the Human Connectome Project data to test for the presence of associations between volumetric measurements of the human brain and certain behavioral variables. The talk is based on joint work with Haoran Li, Debashis Paul & Jie Peng.
We consider inference for a collection of partially observed, stochastic, interacting, nonlinear dynamic processes. Each process is called a unit, and our primary motivation arises in biological metapopulation systems where a unit is a spatially distinct sub-population. Block particle filters are an effective tool for simulation-based likelihood evaluation for these systems, which are strongly dependent through time on a single unit and relatively weakly coupled between units. Iterated filtering algorithms can facilitate likelihood maximization for simulation-based filters. We introduce an iterated block particle filter algorithm applicable to parameters that are either unit-specific or shared between units. We demonstrate this algorithm to carry out inference on a coupled epidemiological model for spatiotemporal measles case report data in twenty towns. We discuss other applications, to cholera in Haiti and COVID-19 in China.

Biography

Prof. Ionides works on statistical analysis of dynamic systems with applications in the biological and health sciences, and specifically in disease transmission. He has developed theoretical and computational aspects of statistical methodologies for inference problems that arise when relating time series data to partially observed stochastic nonlinear disease transmission systems. He has published on the epidemiological dynamics of cholera, HIV, influenza, malaria, measles and polio. Recently, he has developed methodology for inferring disease transmission dynamics from genetic sequence data on pathogens, and for inference on nonlinear, non-Gaussian spatiotemporal systems. He has developed novel classes of stochastic dynamic models that help to fill the gap between mathematical models of biological systems and statistical models that quantitatively describe available data. Prof. Ionides received his undergraduate degree from University of Cambridge and his PhD from University of California, Berkeley. He is an elected fellow of the American Association for the Advancement of Science and the International Statistical Institute.
Algorithmic stability is a framework for studying the properties of a model fitting algorithm, with many downstream implications for generalization, predictive inference, and other important statistical problems. Stability is often defined as the property that predictions on a new test point are not substantially altered by removing a single point at random from the training set. However, this stability property itself is an assumption that may not hold for highly complex predictive algorithms and/or nonsmooth data distributions. This talk will present two complementary views of this problem. In the first part, we show that it is impossible to infer the stability of an algorithm through "black-box testing", where we cannot study the algorithm theoretically but instead try to determine its stability properties by the behavior of the algorithm on various data sets, when data is limited. In the second part, we establish that bagging any black-box algorithm automatically ensures that stability holds, with no assumptions on the algorithm or the data. This work is joint with Byol Kim, Jake Soloff, and Rebecca Willett.

Biography

Rina Foygel Barber is a Professor in the Department of Statistics at the University of Chicago. Before starting at U of C, she was an NSF postdoctoral fellow during 2012-13 in the Department of Statistics at Stanford University, supervised by Emmanuel Candès. She received her PhD in Statistics at the University of Chicago in 2012, advised by Mathias Drton and Nati Srebro, and a MS in Mathematics at the University of Chicago in 2009. Prior to graduate school, she was a mathematics teacher at the Park School of Baltimore from 2005 to 2007.
Large-Scale Inference for Composite Null Hypotheses in Genetic Association Studies

Causal mediation analysis, pleiotropy analysis, and replication analysis are three highly popular genetic study designs. Although these analyses address different scientific questions, the underlying inference problems all involve large-scale testing of composite null hypotheses. The goal is to determine whether all null hypotheses - as opposed to at least one - in a set of individual tests should simultaneously be rejected. Various recent methodology has been proposed for the aforementioned situations, and an appealing empirical Bayes strategy is to apply the well-known two-group model, calculating local false discovery rates (lfdr) for each set of hypotheses. However, in practice, such a strategy is challenged by the need for difficult multivariate density estimation. Furthermore, the multiple testing rules for the empirical Bayes lfdr approach and conventional frequentist z-statistics can disagree, which is troubling for a field that ubiquitously utilizes such z-statistics. This work proposes a framework to unify two-group testing in genetic association composite null settings, the conditionally symmetric multidimensional Gaussian mixture model (csmGmm). The csmGmm is shown to demonstrate more robust operating characteristics than recently-proposed alternatives. Crucially, the csmGmm also offers strong interpretability guarantees by harmonizing lfdr and z-statistic testing rules. We extend the base csmGmm to cover each of the mediation, pleiotropy, and replication settings, and we prove that the lfdr z-statistic agreement holds in each situation. We apply the model to a collection of translational lung cancer genetic association studies that motivated this work.

Biography

Ryan Sun is an Assistant Professor in the Department of Biostatistics at the University of Texas MD Anderson Cancer Center. He received his PhD in Biostatistics from Harvard University in 2017 and joined MD Anderson in 2019. His research interests lie in developing novel statistical methodology that enables scientists to extract knowledge and insights from increasingly complex biomedical datasets. Currently he works heavily with large omics compendiums such as the UK Biobank to better understand the genetic and genomic etiology of cancer. He also emphasizes applying these methods and disseminating the tools to the broader biomedical research community.
EILEEN KING
"CHANGING THE WORLD WITH STATISTICS"
PhD FASA, Research Professor
Division of Biostatistics and Epidemiology
Cincinnati Children’s Hospital Medical Center

SCOTT H. HOLAN
"COMPUTATIONALLY EFFICIENT BAYESIAN UNIT-LEVEL MODELS FOR NON-GAUSSIAN DATA UNDER INFORMATIVE SAMPLING WITH APPLICATION TO ESTIMATION OF HEALTH INSURANCE COVERAGE"
Professor of Statistics
Department of Statistics
University of Missouri/U.S. Census Bureau

TATIYANA V. APANASOVICH
"NEW CLASSES OF MULTIVARIATE COVARIANCE FUNCTIONS"
Associate Professor of Statistics
Department of Statistics
George Washington University
On February 23, undergraduate STAT Ambassadors actively participated in STEAM Night at River Bend Elementary, a local elementary school. STEAM Night brings community volunteers together to offer captivating Science, Technology, Engineering, Arts, and Math activities to young students and their families.

The STAT Ambassadors were enthusiastic about making statistics enjoyable, so they prepared three interactive activities that introduced statistical concepts in a fun and engaging way. Their goal was to ignite curiosity and cultivate a passion for learning in the young participants, inspiring them to explore and embrace the world of statistics.

On May 22nd and 24th, our first year Ph.D. students took the Qualifying Exam. The qualifying exam is a comprehensive exam that covers the material taught in the first-year core courses. The students hard work and dedication yield excellent success rates on the exam!

The first-ever Graduate Student Appreciation Breakfast was held on April 5, 2023, in honor of Graduate & Professional Student Appreciation Week. This celebration aims to recognize graduate and professional students for their hard work and contributions to the university.
The Mathematics and Statistics Fair on April 15 was a collaborative event co-hosted by students and faculty from the department, led by Dr. Scott Crawford, along with Alex Coulter, Alex Buche, Radhika Kulkarni, Rebecca Lee, Isaac Ray, Sophia Lazcano, and Allie Crawford. With engaging activities like riddle-solving and height predictions, the fair highlighted the interactive and enjoyable aspects of mathematics and statistics, encouraging participants of all ages to develop a fondness for these disciplines.

The Department of Statistics welcomed the start of the semester by hosting a complimentary breakfast for students, staff, and faculty. The event provided an opportunity for everyone to come together, share a meal, and foster a sense of community and camaraderie as they embarked on the new academic journey. The event not only nourished the attendees with delicious food but also served as a delightful way to kickstart the semester on a positive note.
The Statistics Ambassadors held their highly anticipated annual Pie-A-Prof canned food drive this semester. The event received an overwhelming response, with students and faculty coming together to support a good cause.

The collective effort resulted in a remarkable donation of 230 pounds of food, surpassing last year's record of 186 pounds. This incredible achievement not only highlights the generosity of the participants but also showcases the growing impact of the Statistics Ambassadors' initiatives.

The Pie-A-Prof canned food drive featured a fun and friendly competition among the professors, adding an element of excitement to the event. After a closely contested tiebreaker, Dr. Arroyo emerged victorious and had the honor of pied Dr. Schafer.

The donated food will go directly to supporting The 12th Can, a local student-run food pantry that aims to serve all students, faculty, and staff in need of assistance. Thank you to the Statistics Ambassadors for their commitment to giving back to the community and making a positive impact.
On January 18th, our department extended its warmest best wishes to Joyce Sutherland on her retirement, effective Friday, January 13. Joyce was the Program Manager for IAMCS and Dr. Raymond Carroll’s assistant during her time in the department.

Joyce has been a member of our department and the University for over 20 years. In honor of her service, we held a special farewell lunch on January 18th to express our deep appreciation for her many years of work and commitment.

Thank you to everyone who joined us in celebrating Joyce's retirement and wishing her all the best in this new chapter of her life.

The University of Texas at San Antonio Carlos Alvarez College of Business organized the 2023 Alamo Symposium in Statistics, from March 10-11, 2023. This symposium served as a platform for researchers and practitioners from diverse fields of statistics to come together and foster data-based discovery, while encouraging research collaborations in South Texas, with a particular focus on Hispanic researchers and practitioners.

Attendees, including our faculty- Drs. Arroyo, Vidakovic, Ni, Guha, and Laha (from left to right) had the opportunity to connect with peers, exchange ideas on modern statistics methodologies and theory, and explore their applications through keynote presentations, organized/invited sessions, contributed sessions, and poster presentations.
On May 3rd, the 2023 SETCASA poster competition unfolded in the Fisher Bowl, attracting an impressive display of talent. Renat Sergazinov claimed the gold prize, showcasing his expertise in statistics. Following closely behind, Connor Brubaker earned the silver prize, and Myeongjong Kang was awarded the bronze prize for their outstanding contributions to the competition.

The judges also extended well-deserved recognition to Carson James, Jaehoan Kim, and Isaac Ray, who received honorable mentions for their remarkable research.

On the undergraduate poster category, Valerie Espinosa’s team won the gold prize with their intriguing poster titled "Snakes or no Snakes." Meanwhile, Nathaniel Fernandes’ team secured the silver prize with their remarkable poster "GlucoBench: Curated List of Continuous Glucose Monitoring datasets with Prediction Benchmarks."

The undergraduate competition exemplified the promising talent and cutting-edge research being conducted by the next generation of statisticians, paving the way for future breakthroughs in the field.
The Department of Statistics at Texas A&M University successfully hosted the CBMS Conference-- Foundations of Causal Graphical Models and Structure Discovery from May 15 to May 19, 2023, with support from the National Science Foundation (NSF DMS-2227849) and the Texas A&M Institute for Applied Mathematics and Computational Science (IAMCS).

The conference focused on the increasingly popular topic of causal discovery, which has significant implications in both statistics and machine learning. Causal discovery serves as a valuable tool for generating causal hypotheses and gaining fresh insights beyond traditional association-based methods.

Renowned scholar, Dr. Kun Zhang, from the Department of Philosophy at Carnegie Mellon University and the Department of Machine Learning at Mohamed bin Zayed University of Artificial Intelligence, delivered ten enlightening lectures on representations and usage of causal models, how causality is different from and connected to association, recent machine learning methods for causal discovery, and why and how the causal perspective helps in a number of learning tasks. The conference was further enriched by the participation of Dr. Peter Spirtes, the Marianna Brown Dietrich Professor and Head of Philosophy at Carnegie Mellon University, who delivered two insightful guest lectures.

The event was organized by Yang Ni, Bani Mallick, and Rajarshi Guhaniyogi. Click HERE if you’re interested in watching the sessions.
Under the dynamic leadership of Dr. Mohamed Aburweis, the 2023 Statistics and Data Science Camp was a resounding success! With a group of 23 enthusiastic campers, we delved into the world of R, the essential programming language for statistical analysis and data science.

Throughout the camp, the participants embraced the learning opportunities and collaborative spirit, coming together to form groups and embark on exciting projects. As the week unfolded, they honed their skills and knowledge, preparing to showcase their remarkable projects at the end of the camp.

Thank you to Lexi and Courtney who played instrumental roles in managing logistics, ensuring camper supervision, maintaining university compliance, and handling room reservations, all of which contributed to the smooth functioning of the camp. Also, a huge shout-out to all of our camp counselors- Mary Ziperman, Joyce Su, and Ethan Godinez.

Additionally, the camp was enriched by a group of devoted lecturers who volunteered their time to impart diverse concepts throughout the week.

Among them were Dr. Scott Bruce, Dr. Scott Crawford, Dr. Toryn Schafer, Jacob Andros, Jhanvi Garg, Jose Rodriguez-Acosta, Connor Brubaker, and Rebecca Lee, each contributing their unique expertise and knowledge to inspire and engage the young participants.

We are immensely proud of the campers and volunteers’ dedication and achievements and were excited to see the impressive results of their hard work!
MAY 2023 GRADUATES

UNDERGRADUATE STUDENTS

MS ON-CAMPUS STUDENTS

MS DISTANCE STUDENTS

PHD STUDENTS
Ananya Roy Chowdhury | Elizabeth Christine Thompson
OTHER EVENTS

**Faculty and Staff Appreciation BBQ**
On Saturday, April 15th, the annual BBQ took place at Tiffany Park, organized by the graduate students as a gesture of gratitude towards the faculty and staff. The attendees enjoyed a delicious BBQ from C&J while fostering a sense of camaraderie through fellowship and fun games.

**Lunar Year Celebration**
The Lunar New Year is a celebration of the arrival of spring and the beginning of a new year on the lunisolar calendar. During the 15-day festival, families and friends get together to fellowship and enjoy traditional food.

**Aggieland Saturday**
On February 11, our department participated in Aggieland Saturday, a campus-wide open house event for prospective students and their families to explore the university's offerings. Our undergraduate statistics students played a key role in engaging with visitors, answering questions, and creating a welcoming and informative environment for all attendees.

**Holi Festival and International Women's Day Celebration**
The Holi Festival is a Hindu celebration symbolizing the end of winter, and the arrival of spring. International Women's Day has been celebrated since 1910, bringing awareness to the struggles and accomplishments of women around the world.
OUR MAJORS

1. UNDERGRADUATE MAJOR
   B.S. IN STATISTICS
   EXPECTING: 92 STUDENTS FOR FALL 23
   ENROLLED: 160 STUDENTS IN FALL 22

3. GRADUATE MAJORS
   MS IN DATA SCIENCE
   MS IN STATISTICAL DATA SCIENCE
   Ph.D. IN STATISTICS
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