

Department of Statistics

Fall 2017

# Newsletter



IOWA STATE UNIVERSITY  
Department of Statistics





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## Have a story?

Email Kati at [klsmith@iastate.edu](mailto:klsmith@iastate.edu)

Dear reader,

The Department of Statistics newsletter is published for the alumni, friends, students, and faculty of the Department of Statistics, an academic department in the College of Liberal Arts and Sciences, and the College of Agricultural and Life Sciences at Iowa State University. It provides the latest news and achievements of the department and we are thrilled to share it.

Kind regards,

**IOWA STATE UNIVERSITY**

**Department of Statistics**

# Letter From The Chair

Thank you for reading the 2017 newsletter of the Department of Statistics at Iowa State University.

You may have heard that ISU President Stephen Leath left Ames during the summer to take the position of President at Auburn University. Since his departure, former ISU Provost Benjamin Allen has served as Interim President of the university. On October 23, a national search concluded with the announcement that ISU's current Dean of the College of Agriculture and Life Sciences, Wendy Wintersteen, will be ISU's 16th president. Wintersteen will officially begin her new position on November 20.

Closer to home, we had three faculty retirements during the last academic year. Professors Song Chen, Dianne Cook, and Mervyn Marasinghe have joined the ranks of our emeritus faculty after having made major contributions to the department and its programs over many years.



On the other side of the ledger, the department hired one new assistant professor this semester. Professor Danica Ommen recently completed her PhD in Statistics at South Dakota State University, and specializes in the application of statistics to forensic science problems. She will be a participant in the Center for Statistics and Applications in Forensic Evidence here at ISU. We will also be conducting searches for two additional tenure-track faculty this year.

The faculty of the Statistics Department continue to receive recognition for their important contributions to the discipline of statistics, and to applications of importance in a number of fields. Two of our faculty received particularly prestigious awards during the past year. Professor Alicia Carriquiry was named a fellow of the National Academy of Medicine, and Professor Emeritus Wayne Fuller received the Samuel S. Wilks Memorial Award from the American Statistical Association.

Since August of 2016 and through August of 2017, 18 graduate students in our program have completed PhD's and 7 have completed MS degrees. For the fall 2018 term, the Department admitted thirty-seven new graduate students from across the globe – our largest entering class in recent years. Their countries-of-origin include Bangladesh, China, Costa Rica, Hong Kong (China), India, Iran, Kazakhstan, S. Korea, Kyrgyzstan, and the United States.

We also take great pride in the accomplishments of our alumni; see the update on Donna Brogan in this issue. We'll continue to include alumni stories in future issues, so please share your news (or any other feedback) with us by calling (515-294-3440) or email ([statistics@iastate.edu](mailto:statistics@iastate.edu)). And do drop by to see us in Snedecor Hall when you are in Ames.

Sincerely,

Max D. Morris

# Faculty News

## Vardeman named Kingland Data Analytics Faculty Fellow

Stephen Vardeman was recently awarded a named faculty position thanks to a generous donation from Kingland and its owners, David and Deb Kingland. Vardeman was named Kingland Data Analytics Faculty Fellow.

Vardeman's professional interests include Statistical Machine Learning, Business and Engineering Analytics, Statistical Education, and Statistical Theory and Methods. He received the 1994 American Society for Engineering Education (ASEE) Meriam-Wiley Distinguished Author Award for outstanding new engineering textbook (*Statistics for Engineering Problem Solving*). He has also coauthored three additional statistic textbooks. Vardeman has advised 28 Ph.D. and 52 M.S. students since joining the Iowa State Department of Statistics in 1981.



“I am grateful to the Kinglands for their generosity and kind support of basic research at Iowa State University,” Vardeman said. “The Kingland fellowship will provide flexibility and opportunities to myself and my graduate students that will be a real aid in moving the fundamentals of statistical machine learning forward.”

The awards are part of a \$1.5 million donation to the College of Liberal Arts and Sciences, the College of Business, and the College of Engineering by Kingland, a global leader in data quality control, development and risk management, and from a personal donation by its owners, David and Deb Kingland, to support several areas in data science.

The donation also established the Kingland Data Analytics Scholarship Fund, which will help attract top students and make the opportunity for a degree in data programs available to more students.



## Jae-Kwang Kim Blog Receives National Media Attention

In April 2017, during the Korean presidential campaign, Professor Jae-Kwang Kim noticed some irregularities involving the very rapid rise in poll numbers for one of the five presidential candidates.

Democratic Party candidate (now Korean President) Moon Jae-in was leading in the polls until there was a sudden soar in popularity with People's Party candidate Ahn Cheol-soo. The quick and unexpected change in numbers intrigued Kim.

Kim examined the data and found that the polls looked normal on the surface. However, when he looked at the survey in more detail, he noticed there were changes in sampling between the March and April polls.

Once Kim recognized this issue, he posted his findings to his blog. The blog post brought national attention to local Korean news and Kim was interviewed multiple times for TV reports.

He concluded that there was an attempt to misrepresent the poll numbers by using weird sampling in order to make candidate Ahn Cheol-soo look more popular than he was.

In May 2017, Moon Jae-in was elected president.



## Ommen Wins Stephen E. Fienberg CSAFE Young Investigator award

Danica Ommen, an assistant professor in Statistics, won the Stephen E. Fienberg CSAFE Young Investigator award at the 2017 International Conference on Forensic Inference.

The Stephen E. Fienberg CSAFE Young Investigator Award rewards and encourages excellence in forensic statistics at an early stage of career development, as personified by the late Stephen E. Fienberg. Ommen's presentation examined whether enough forensic evidence samples have been collected to provide a reliable value of evidence to the court system such as a Bayes Factor or approximate likelihood ratio, leading into a discussion about the size of forensic databases.



## Department Hosts Baltimore Reception

The ISU Statistics Department hosted a reception for alumni and friends at the Joint Statistical Meetings in Baltimore in August.

Current and former students and faculty members enjoyed reconnecting and catching up with each other. If you missed this event, we'll hope to see you at a future JSM reception.



## Mervyn Marasinghe Retirement Party

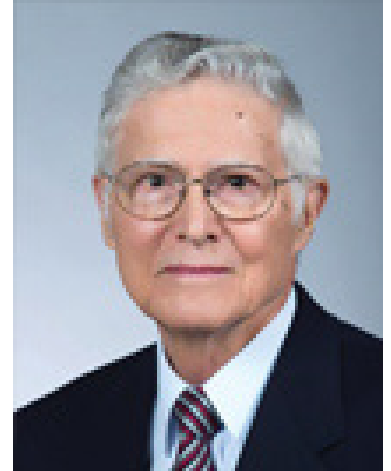
Last fall, the Department of Statistics hosted a retirement party honoring Mervyn Marasinghe after his many years of dedication to our students.



## Fuller Receives Samuel S. Wilks Memorial Award

Wane Fuller was recently chosen to receive the Samuel S. Wilks Memorial Award.

Fuller was nominated and selected for his contributions to three areas of statistical theory: time series analysis, measurement error models, and survey sampling. Fuller was also selected for his translation of this theoretical work into applied statistical methods and practices that have contributed to the US federal statistical system, and for other statistical programs in the US and internationally.



The Wilks Memorial Award is awarded by the American Statistical Association to recognize outstanding contributions to statistics. This award was created in 1964 to honor the memory and notable career of Samuel S. Wilks.

# Student News

## R-Ladies Ames

R-Ladies Ames is a new organization founded by Ph.D. candidate Sam Tyner and recent Ph.D. graduate Dr. Natalia da Silva.

R-Ladies is a worldwide organization whose mission is to promote gender equality in the R Community. As a diversity initiative, R-Ladies' goal is to achieve proportionate representation by encouraging, inspiring, and empowering the minorities currently underrepresented in the R community.



Members of R-Ladies come from all over campus, not just the Department of Statistics. Members also include students and faculty from the departments of Ecology, Evolution, and Organismal Biology; Bioinformatics and Computational Biology; Genomics; Agronomy; and Computer Science.

Those interested in joining R-Ladies Ames should email Sam Tyner ([sctyner@iastate.edu](mailto:sctyner@iastate.edu)). To find out more information please visit [www.meetup.com/R-Ladies-Ames](http://www.meetup.com/R-Ladies-Ames) or follow them on twitter [@RLadiesAmes](https://twitter.com/RLadiesAmes).

## 2016-17 Ph.D Graduates

The individuals named below completed PhD requirements in the Department of Statistics between August 2016 and August 2017. Their dissertation titles and names of their major or co-major professors are also listed. We are proud of all our graduates, and look forward to hearing of their future accomplishments.

**ISRAEL ALMODOVAR-RIVERA**, *Some contributions to K-means clustering problems*, Maitra

**IGNACIO ALVAREZ-CASTRO**, *Bayesian analysis of high-dimensional count data*, Niemi

**GUILLERMO BASULTO-ELIAS**, *Kernel deconvolution density estimation*, Carriquiry, Nordman, and De Brabanter

**FAN CAO**, *Local polynomial kernel smoothing with correlated errors*, De Brabanter

**HAO CHENG** (co-major in Genetics), *Contributions to improve the accuracy and computational efficiency of genomic prediction*, Fernando, Garrick, and Carriquiry

**NATALIA DA SILVA**, *Bagged projection methods for supervised classification in big data*, Cook and Hofmann

**ROBERT CHRISTIAN FOSTER**, *Topics in empirical Bayesian analysis*, Kaiser

**JEREMY ROBERT HADLER**, *Forensic tool mark comparisons: tests for the null hypothesis of different sources*, Morris

**ERIC RIEMER HARE** (co-major in Computer Science), *Statistical methods for bullet matching*, De Brabanter and Hofmann

**REKA HOWARD** (co-major in Plant Breeding), *Evaluation of parametric and nonparametric statistical methods in genomic prediction*, Beavis and Carriquiry

**KEGUO HUANG** (co-major in Mathematics), *Topics in queueing theory*, Ghosh

**MARGARET CAROLYN JOHNSON**, *Methods for analysis and uncertainty quantification for processes recorded through sequences of images*, Caragea

**ANDREA JEAN KAPLAN**, *On advancing MCMC-based methods for Markovian data structures with applications to deep learning, simulation, and resampling*, Nordman and Vardeman

**EMILY ANNE KING**, *Bayesian inference of virus evolutionary models from next-generation sequencing data*, Dorman

**WILLIAM MICHAEL LANDAU**, *High-dimensional hierarchical models and massively parallel computing*, Niemi

**QI LI** (co-major in Industrial Engineering), *Decision making under uncertainties for renewable energy and precision agriculture*, Hu and Wu



**ANDREW JOSEPH LITHIO**, *Statistical methods for estimation, testing, and clustering with gene expression data*, Maitra and Nettleton

**DENNIS FRAZER LOCK**, *Statistical methods in sports with a focus on win probability and performance evaluation*, Nettleton

**ADAM M MARTIN-SCHWARZE**, *Extending removal and distance-removal models for abundance estimation by modeling detections in continuous time*, Dixon and Niemi

**YONG MEI** (co-major in Chemical Engineering), *Modeling and control to improve blood glucose concentration for people with diabetes*, Rollins and Wu

**NICHOLAS LORENZ MICHAUD**, *Bayesian models and inferential methods for forecasting disease outbreak severity*, Niemi

**LIUHUA PENG**, *Topics in statistical inference for massive data and high-dimensional data*, Chen and Nettleton

**CARSON PAUL SIEVERT**, *Interfacing R with web technologies for interactive statistical graphics and computing with data*, Hofmann

**EDUARDO TRUJILLO-RIVERA**, *Nonparametric regression models with and without measurement error in the covariates, for univariate and vector responses: a Bayesian approach*, Carriquiry, De Brabanter, and Nordman

**YUHANG XU**, *Selected topics in measurement error and functional data analysis*, Li

**YUERAN YANG** (co-major in Psychology), *To deny or confess: an interrogation decision-making model*, Madon and Nettleton

**XIN YIN** (co-major in Bioinformatics and Computational Biology), *Probabilistic methods for quality improvement in high-throughput sequencing data*, Dorman

**WEI ZHANG**, *Inference based on data from superpositions of identical renewal processes*, Meeker

# Alumni Updates

## Alumni Update: Donna Brogan

Hello to the ISU Statistics Department:

My time at ISU as a statistics doctoral student during 1962-1967 (50-55 years ago!) has been on my mind a lot the last few years because during this time I published and/or presented some papers about my career path into the field of statistics and my



subsequent fifty years in academic biostatistics. Although I retired in 2004 from Emory University Biostatistics and Bioinformatics Department (Professor Emerita), I am still active as a biostatistician, primarily in my specialty area of design and analysis of complex sample surveys. I teach continuing education courses in my statistical specialty and occasionally consult as a sample survey statistician.

As I say to my friends and colleagues: "I have retired from Emory University, but I have not retired from biostatistics." I love biostatistics (and statistics) and would miss it if it were not part of my life. The nice thing about retirement, versus full-time employment, is that I have much more control over the amount of time that I spend on statistical activities.

I also have interests and activities in retirement that are beyond statistics. For example, one of my passions since 2000 is challenge level square dancing, which is mathematical, analytical and intellectually challenging. Before finding this activity, I had never been in any social group where almost everyone is mathematically oriented: mathematics, statistics, engineering, computer science, computer programming, operations research, quantitative business, etc.

In writing and speaking recently about my somewhat nonlinear career path into statistics, I realize again how important my ISU years were in solidifying my interest in statistics, expanding my interest in sample survey methodology, and preparing me for varied career options after I received my Ph.D. in statistics. Thank you to the Statistics Department! In addition, I appreciate the financial support that I received while at ISU, first from the university and then from an NIH departmental training grant.

## Alumni Establish Wayne A. Fuller Graduate Scholarship

Years ago, Wayne Fuller entered his office at Iowa State University and noticed something new on his door. Someone had put up a notepad that read, ‘Take a number.’

“It shows how busy I was at the time,” Fuller said, laughing.

Fuller, an Emeritus Distinguished Professor in statistics at Iowa State, is an internationally recognized scholar and major figure in the history of Iowa State’s Department of Statistics and Center for Survey Statistics and Methodology (CSSM). But he is also a beloved mentor, known for devoting time to mentor and support countless graduate students during his long career.



Early in his career, it wasn’t called “mentoring,” Fuller noted. Working with graduate students was a natural part of his job. The continuous opportunities to collaborate with graduate students on real projects was a primary reason why Fuller remained at Iowa State and CSSM for the duration of his career, he said.

“Working with graduate students has been my real joy,” Fuller said. “Every graduate student has taught me something. I’ve had a lot of good students.”

The joy is mutual and now a number of Fuller’s former students are giving back. Dedicated alumni and friends from across the United States recently established the Wayne A. Fuller Graduate Scholarship in Statistics to honor Fuller. This generous award will be presented each year to an outstanding incoming graduate student and also serves as a recruitment tool to attract exceptional students to the department. The first Fuller Graduate Scholarship was awarded this September to Mr. Charles Labuzzetta.

Fuller admits he was quite surprised by the honor and still hasn’t found the right word for what it means to him.

“I was pretty close to speechless,” he said, “or at least incapable of coming up with an adequate expression.”

Max Morris, professor and chair of the Department of Statistics, describes Fuller as the “intellectual backbone” of the CSSM over the years and a person who was responsible for a high rate of graduate student productivity and success.

“Wayne has had a long and distinguished career at Iowa State. He is a superb scholar, and he’s taken a great interest in working one-on-one with many graduate students. Many have gone out and had very successful careers and attribute much of what they know to Wayne. I look at the effect, and I know it’s special. Wayne pays attention to every student as an individual and thinks very hard about how to relate to them and help them mature as scholars in their own right,” Morris said.

Contributions to support the Fuller Graduate Scholarship can be made at [www.foundation.iastate.edu/fuller](http://www.foundation.iastate.edu/fuller). For more information, contact Michael Gens, Executive Director of Development, College of Liberal Arts and Sciences, at 515.294.0921 or [mgens@foundation.iastate.edu](mailto:mgens@foundation.iastate.edu).