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As I write this letter, I have less than six days left as Head of Purdue Statistics. This academic year has flown by, as I counted down the days. So much has happened this year. We welcomed six new faculty to our roster, renovated our website (www.stat.purdue.edu), said goodbye to faculty, staff and students, and continued on with our mission of being one of the most forward thinking modern statistics departments in the world.

On June 30, 2015 I will step down as the third Head of the Department of Statistics at Purdue University. This experience has been life changing. I look forward to returning to (being normal) full-time faculty. Purdue Statistics has grown over the years, and I am confident the future of Purdue Statistics is firmly focused on continued success. I am grateful to the alumni, faculty, friends of Purdue Statistics, staff and students for their patience (with me), support and hard work. Thank you. “Pride” is the only word that comes to mind from this experience.

Reflecting on my expectations/anticipations/anxieties when I became Head...there was so much for which I had no appreciation. Namely, I did not know enough to expect the satisfaction that I have gained from helping to grow education, careers, and research vision. As Head, I learned the importance of a strong foundation of alumni and colleagues upon whom I have relied for information, advice, wisdom and generosity. I have worked hard to maintain relationships with current alumni from all over the world, and to reconnect Purdue Statistics with its friends and alumni—all of whom have such happy memories and stories! Thank you for always being so welcoming!

In the Spring of 2015, the Department engaged in an internal (to Purdue) search for the next Head of Department. The search committee was charged with the responsibility of supplying the Dean of Science (Jeffrey Roberts) with an unranked list of qualified applicants. Proudly, four faculty volunteered to participate in the search process. The first stage of the process involved the applicants meeting with Statistics faculty, staff and students in separate meetings. Candidates also provided their vision (via a seminar) for the future directions of Purdue Statistics. The interview process was guided smoothly by members of the search committee (thank you).
Once the departmental process was complete, acceptable names were passed to the Dean who conducted his own interview process. It is with great pleasure that we announce Professor Hao Zhang as the fourth Head of Purdue Statistics. Hao has been the Associate Head of the Department for the last three years; he is well in tune with our strategic plan and mission. We thank him in advance for his commitment to Purdue Statistics.

We look forward to seeing Purdue Statistics friends and alumni at the Joint Statistics Meetings in Seattle this year. The Purdue Statistics Reception will start at 6:30 pm, Sunday, August 9, 2015 in the Head Quarter Hotel, Sheraton Seattle (Willow Room-A). As always, there will be great food, drink, conversation and the handing over of the Purdue Statistics reins to Professor Hao Zhang! See you there!

Hail Purdue!

Rebecca
Anita Singh was born in New Delhi, India. She completed her Master of Science in Mathematical Statistics in 1973, for which she received a Gold Medal Award.

Dr. Singh joined the PhD program in the Department of Statistics here at Purdue. She earned her MS and PhD in 1978 under the leadership of K.C.S. Pillai. From 1980—1991 Anita was a professor of statistics at New Mexico Institute of Mining and Technology. She then joined Lockheed Martin Environmental Services.

As the technical team leader, Dr. Singh has provided statistical guidance for over 120 CERCLA, RCRA, and unexploded ordnance FUDS (Formerly Used Defense Sites) site projects, providing technical assistance to address data analytic, site characterization, exposure and risk assessment, and dose-response modeling needs.

Anita is the key developer of ProUCL 4.0 and Scout 2008; statistical software packages for the Environmental Protection Agency (EPA). ProUCL has over 20,000 users worldwide and is routinely used to address statistical issues of exposure and risk assessment, groundwater monitoring and other comparison studies.

In addition to her accomplishments in software development and technical leadership, Dr. Singh has co-authored over 60 peer-reviewed journal articles and numerous unpublished documents.

Anita has many fond memories of her time at Purdue University. Playing bridge during her lunch hour with faculty members and classmates is one of those memories. Also, while at Purdue, she met her husband, Dr. Ashok Singh—who also received his PhD from the Department of Statistics under the direction of Professor Shanti Gupta.
Prior to Purdue offering an Actuarial Science degree, in 1993 Anne Jackson received her B.S. in interdisciplinary mathematics & statistics.

Ms. Jackson is a principal and consulting actuary with the Indianapolis office of Milliman. She joined the firm in 1997.

Throughout Anne’s career she has worked on a wide range of interesting projects, developing an expertise in analyzing and modeling healthcare expenditures.

The diversity of projects has been a gratifying aspect of Ms. Jackson’s career. Anne’s experience include health plan pricing, support for Medicaid state agencies and predictive analytics.

She has also participated in extensive research projects for pharmaceutical companies and medical device manufacturers.

As a freshman at Purdue, Anne enrolled in engineering. After two years, Anne changed to Actuarial Sciences because she enjoyed the mix of math, economics and business.
The Department of Statistics introduced a new opportunity for sophomore undergraduate students, starting in 2014-15. The program is called the Statistics Living-Learning Community (STAT-LLC). This effort is funded by a 5-year, $1.5-million National Science Foundation grant. Twenty sophomore undergraduate students participated in 2014-15. A total of 100 students will participate during the 5-year life of the grant (20 new sophomores every year). Although students from any major can apply to the program, the curriculum and research is focused on statistics. The goal of the program is to introduce students to concepts from Big Data Analysis—and to research experiences where students can apply these skills—at a very early point in their studies.

The students all live on the same floor of the Hillenbrand residence hall. Living together in a learning community is a known best practice for student success. The students take common sections of probability theory, statistical theory, and a new course on data analysis. In the new data analysis course, the students work in teams on projects, throughout the semester. They each participate in a 12-month research experience that lasts from August of their sophomore year to August of their junior year.
All of the faculty on the team who submitted the grant to the NSF are from the Department of Statistics. Research mentors for the students are available from Statistics and from other disciplines across the university that have Big Data as a key component of the research.

During March 27-29, 2015, the students participated in the first annual ASA DataFest offered at Purdue. The data for the ASA DataFest was provided by Edmunds.com. The students spent 48 hours exploring a large data set about buyers and sellers of automobiles. They made team presentations at the end of the ASA DataFest about their discoveries. Edmunds.com was impressed with the results of the students’ investigations.

On April 24 and 25, the students will travel to Rose-Hulman Institute of Technology to participate in the Undergraduate Mathematics Conference. The theme of this year’s conference is “Statistics: From Big Data to Big Decisions.”

Statistics Department members pose with Dean Roberts (left). Back row: Walid Sharabati, Lingsong Zhang, Bruce Craig, Doug Crabill, Sharon Christ. Front row: Mark Daniel Ward, Hao Zhang, Jun Xie, Hyonho Chun, Ce-Ce Furtner
Statistical Success—A New Model For Learning Statistics (cont.)

Left to right: Ashley Peterson, Bailey O’Malley, Christina DeSantiago, Lake Yoke, Weston Phillips

Left to right: Felix Francisco-Sanchez, Christine Zhang, Christopher Vincent, Peter Boyd

Left to right: Jenna Reno, Christine Ringwald, Emily Martin

Seated left to right: Abby Johnson, Emily Malek, Abigail Vorhies; standing, left to right: Erik Norlin, Patrick Gallagher
Congratulations Graduates!

August 2014 Graduates

Ph.D. Graduates

* Jyotishka Datta
* Shuang He
* Zhaonan Sun

Graduate Certificates

* Lavanya Iyer
* Mengxi Lin
* Jing Lu
* Zhenghui Sha
Congratulations Graduates!

December 2014 Graduates

Ph.D. Graduates
- InKyung Choi
- Mohan Gopaladesikan
- Xiang (Sean) Han
- Yen-Ning Huang
- Jianfu (Jeff) Li
- Libo Wang
- Jingyi Zhu

MS Graduates
- Xiaoxiao Chen
- Yingpei He
- Melih Burak Koca
- Yunfan Li
- Yixuan Qiu
- Simeng Qu
- Barret Schloerke
- John Vizza

Certificate Graduates
- Ching-Chih Wu
- Hsiu-Han Yang
Congratulations Graduates!

May 2015 Graduates

**MS Graduates**
- Molly Amstutz
- Matthew Bowers
- Jingyuan (Deborah) Chen
- Berend Coster
- Alexandra Foote
- Zheng (Alex) Gao
- Courtney Henry
- Kara Keller
- Hyoeun Lee
- Qi Wang
- Wenda Wang
- Jiasen Yang
- Chuang (Silvester) Yao
- Hao Zhang
- Ru Zhao
- Yanling Zhao
- Yiqiang Zheng
- Bingrou (Alice) Zhou

**Ph.D. Graduates**
- Philip Gautier
- Xian He
- Chi Wai Baron Law

**Graduate Certificates**
- Kevin Grady
- Jainik Panchal
The 2014 Joint Statistical Meeting (JSM) was held in Boston, Massachusetts. It is the largest gathering of statisticians held in North America. It is held jointly with these societies:

*American Statistical Association
*Institute of Mathematical Statistics
*International Biometric Society (ENAR and WNAR)
International Chinese Statistical Association
International Indian Association
International Society for Bayesian Analysis
Korean International Statistical Society
*Statistical Society of Canada

(*indicates the founding societies of JSM)

Attended by more than 6,000 people, meeting activities include oral presentations, panel sessions, poster presentations, continuing education courses, an exhibit hall (with state-of-the-art statistical products and opportunities), career placement services society and section business meetings, committee meetings, social activities and networking opportunities.

The Joint Statistical Meetings provide a unique opportunity for members to come together each year and share their scientific ideas. The theme for 2013 was Celebrating the International Year of Statistics. The program highlighted the power and impact of statistics on all aspects of science and society on a global scale.
Joint Statistical Meeting 2014
The 2015 Joint Statistical Meeting (JSM) will held in Seattle, Washington. This year’s conference runs from August 8-13, 2015 and will be held in the Washington State Convention Center.

The Purdue Friends & Alumni reception will be held on Sunday, August 9, 2015 at the Seattle Sheraton in the Willow-A Room starting at 6:30 pm. Please join us for a wonderful evening of food, drink and conversation. We will have a great time reconnecting with old friends and meeting new ones.

Also, please join us as we come together to celebrate and welcome Hao Zhang as Purdue Statistics fourth Department Head!

The Seattle Sheraton is located at 400 Sixth Avenue, Seattle, WA 98101. We look forward to seeing you there!
Congratulations to Stephen Mussman for being awarded the 2015 G. A. Ross Award!

Steve’s positive attitude and willingness to help can be felt both in and out the classroom, on the Purdue campus and in the Greater Lafayette community.

Steve is an accomplished and exceptional student. He is completing an astounding six majors and a minor in Physics; maintaining a 4.0 cumulative index. His majors include: Mathematics Honors, Statistics Honors, Applied Mathematics, Mathematics/Statistics with Honors, Mathematics-Computer Science, and Computer Science.

Steve contributes to his fellow students as a tutor, President of the Math Club, and as a mentor to younger students.

In addition, Steve is a College of Science Ambassador. He has served in this capacity for two and a half years. He talks to both new and prospective students about life at Purdue and offers group and one-on-one discussions.

He serves the community and is a dedicated citizen. He demonstrates this commitment to others by raising funds for Riley Hospital for Children and for the Special Olympics. He has visited the Indiana Veteran’s Home and Creasy Springs. He also participated in the Winterization and Springification programs, helping local families with household chores in preparation of the changing seasons.

Steve was also nominated for and won the Bruce Helfert Memorial Award.

The G. A. Ross Award is presented annually to a senior male who has demonstrated “high standards of academic achievement, evidence of outstanding leadership, strength of character, and overall contributions to the University.” The recipient of the award receives the G.A. Ross medal, a certificate, and a cash prize. The names of the winners are inscribed on an obelisk at the northeast corner of the Purdue Mall.

The award is in honor of George A. Ross of Lafayette, a 1916 graduate of Purdue University and the first full-time executive secretary of the Purdue Alumni Association. George presented the University with an endowment to establish an award for the outstanding student in each graduating class. The G.A. Ross award was first given in 1959.

He is a polite, kind and humble young man, whose character lends him to be an outstanding student, mentor, and citizen, making Purdue and specifically the Department of Statistics truly proud.
Congratulations to Kara Keller for being the most recent recipient of the Dr. Dolores Cooper Shockley Presidential Award!

In 1955, Dr. Dolores Cooper Shockley became the first African-American to receive a doctoral degree from Purdue University and the first African American woman in the United States to receive a PhD in Pharmacology. Immediately preceding the Civil Rights and Women’s Liberation Movements, Dr. Shockley pressed through the many barriers placed before her to achieve such an outstanding accomplishment. Her notable and diligent strive for excellence continues to inspire many African American students that matriculate through Purdue University today. The selected honoree is one who has remained truly committed to the improvement and uplifting of the Black community, the pursuit of excellence in academics, and has also remained a dedicated and loyal member of the Black Graduate Student Association. The recipient is a role model to current members, and a shining reflection of Dr. Shockley’s legacy.

The Dr. Dolores Cooper Shockley Presidential Award was presented to Kara at the Black Graduate Student Association’s annual award banquet. Purdue Statistics is proud of Kara’s commitment to the African American community, her pursuit of academic excellence and her dedication to serve as a role model to current students.

The Department of Statistics is also proud to have sponsored tables at the BGSA’s annual award banquet. We support and stand behind the organization’s commitment to unifying its members through the assistance of programs that strengthen the community of African American graduate and professional students across disciplines.
With rapid advancement in science and technology, data are presently accumulated with unprecedented speed. Examples include data from medical records of all patients in a large health care provider over time, world climate, wireless sensor network, and so on. When data are larger in size than can be stored, processed and analyzed in using traditional methods in reasonable time, we are entering the era of “Big Data.” Massive sample sizes introduce unique computational and statistical challenges.

Let us start from a recent news on big data. On August 6, 2014, Nature (http://www.nature.com/news/us-big-data-health-network-launches-aspirin-study-1.15675) released news: “US Big-Data Health Network Launches Aspirin Study.” In this $10-million pilot study, the use of aspirin to prevent heart disease will be investigated. Specifically, participants will take daily doses of aspirin that fall within the range typically prescribed for heart disease, and be monitored to determine whether one dosage works better than the others. The health-care data such as insurance claims, blood tests and medical histories will be collected from as many as 30 million people in the United States through PCORnet (A network setup by Patient-Centered Outcomes Research (PCOR) Institute for collecting health-care data.). The system, PCORnet, will connect multiple smaller networks, giving researchers access to records at a large number of institutions without creating a central data repository. This decentralization creates one of the greatest challenges on how to merge and standardize data from different networks to enable accurate comparison. The many types of data — scans from medical imaging, vital-signs records and, eventually, genetic information—can be messy, and record-keeping systems vary among health-care institutions. Motivated by this US health network data, we summarize the features of big data as 4D:

Distributed: computation and storage bottleneck;
Dirty: the curse of heterogeneity, e.g., unstructured data;
Dimensionality: accompany with a large sample size and growing;
Dynamic: varying and unknown underlying distribution, e.g., temporal data
These features, which are often mixed together in reality, make it very challenging to apply traditional statistical thinking to massive data. For example, how to allocate a limited computational budget for conducting the best possible statistical analysis in a parallel computing environment? Another example is how to efficiently extract common features across many sub-populations in massive heterogeneous data while exploring the heterogeneity of each one even when the number of sub-populations grow. These tasks become more formidable when the underlying distribution is unknown and varies as data accumulates.

The major goal of Cheng’s big data theory research group is to develop theoretical foundation of big data under which all these questions can be addressed. The consideration of computation in the statistical analysis for big data is another important feature of our research. Our group members (including five PhD students, one visiting assistant professor and two affiliated faculty members) are working in diverse directions including semiparametric inference, meta analysis, tensor decomposition and Bayesian analysis. Our big data research is currently sponsored by National Science Foundation, Simons Foundation and Office of Naval Research.

Guang Cheng
Associate Professor
Department of Statistics
Purdue University
The annual After Holiday Party was a great success again! This year's event was held in the East/West Faculty Lounge and was catered by the Union. Nearly 130 Statistics friends and family joined in the festivities.

Every year the department’s After Holiday Party has a different theme. This year’s theme was a Western theme. Lots of fun was had with a three legged race, karaoke, and great food! There was even a “Wanted” poster!

A good time was had by all!
After Holiday Party
“Western”
Graduate student Whitney Huang was awarded Honorable Mention in the Student Poster Competition of the 2014 Graybill/ENVR Conference held at Colorado State University.

The Graybill Conference is hosted annually by the Department of Statistics at Colorado State University. The conference is named in honor of Dr. Franklin A. Graybill. Dr. Graybill was involved in the development of Colorado Stat’s statistics program. The focus of the conference is on new developments in statistical ecology, broadly defined. The conference is jointly sponsored by CSU and the American Statistical Association’s section on Statistics for the Environment (ENVR).

It is the aim of the conference to bring together a wide range of researchers, practitioners and graduate students whose work is related to the conference theme in a wide sense.

Zuofeng Shang and Guang Cheng have recently published one research article on the Local and Global Asymptotic Inference in Smoothing Spline Models (Annals of Statistics; 41:2608-2638). The new procedure for inference developed in their article, together with their rigorously derived asymptotic properties, fill one longstanding gap in the smoothing spline literature. It has been commented that this work is “perhaps the most important breakthrough in the asymptotic theory of spline smoothing in a long time.”
Accomplishments

Dr. Jayanta Ghosh participated in a lecture as a part of the 2013-14 CoS Research Award Presentations.

Dr. Ghosh lectured on Multiple Tests, explaining why they have become popular in modern genetics, and in what sense these tests are high dimensional but relatively easy to understand and apply. He also touched on Optimal Objective Priors which are useful for model selection and estimation in the context of linear models. This is joint work with a former student Jyotishka Datta, who is currently at Duke University.

Dr. Jayanta Ghosh has many creative interests. His early work was on Sequential Analysis, and his thesis led to an easy and novel method of constructing sequential tests, using invariance and sufficiency. A joint paper was produced in the annals of Mathematical Statistics, now renamed Annals of Statistics. Since then he has written many single authored, as well as joint papers, with many people. Such joint work remains a great pleasure in his academic life. Fairly recently Professor Bogdan, Dr. Ghosh, a former graduate student Arijit Chakrabarti, and a couple of other co-authors wrote a long paper on multiple testing in the Annals of Statistics. This remains one of the few basic papers on multiple testing.

In very recent work he has been modeling illness and in at least one case has been able to connect it successfully with big data based methods. He has also been working with Professor P.K. Sen of the University of North Carolina on Arsenic pollution in water in Calcutta.

In his long life he has had several intellectual homes. Of the two most important homes, one is ISI (Indiana Statistical Institute) founded by P.C. Mahalanobis. Another home is of course, Purdue, where Dr. Ghosh has enjoyed a long career and is now ready to retire. Both ISI and Purdue have provided him many outstanding graduate students, who earned their PhD under his direction. His hope is to have been of some use both at ISI and at Purdue.
Congratulations to Whitney Huang and his wife Fiona on the birth of their new son, Lionel! Lionel was born on August 6, 2014 and weighed 6 lbs. 14 oz.

Lingsong Zhang and Xuanyao He welcomed their little girl, Emma Zhang on July 27, 2014. Little Emma weighed in at 6 lbs. 8 oz.

The Sorola family welcomed home the newest edition to their family on May 19, 2014. Little Timothy Ethan Sorola weighed 7 lbs. 11 oz. Congratulations!
Welcome to Purdue Statistics!

Anna Hook is our newest staff member. Anna is our new front office secretary. She started here at Purdue Statistics on March 2, 2015 after moving here from Carroll, Iowa where she worked in Patient Finance at Saint Anthony Regional Hospital. She was born and raised in Indiana and has returned home to family and friends. Prior to living in Iowa, she was the office manager of the Logansport Police Department. She is currently living in Logansport and has two sons, James, 22 and Joey, 20.

Anna Hook

Jeffrey Klimes is our temporary Graduate Secretary. Jeffrey hails from Greenwood, Indiana where he attended Center Grove High School. He spent three years in Germany while in grade school and had a great experience living overseas. Jeffrey met his fiancé in high school and will be getting married in January 2016. He received dual BS degrees in Nuclear Engineering and Physics from Purdue. In September he will be attending the University of Chicago pursuing an MS in the Physical Sciences Division. He plans to continue toward a PhD program and eventually work in physics research.

Jeffrey Klimes
Happy Retirement Wishes!

Happy retirement to Teena Erwin and Mary Roe! Thank you both for your hard work, dedication and positive attitudes! These are only a few of the many things you both shared with us every day! Congratulations!

Mary Roe worked at Purdue for over 20 years. She worked in the Department of Statistics from 2005—2015. She has retired to sunny Florida!

Mary Roe

Teena Erwin served the Department of Statistics from 1982—2015! She is enjoying spending time with her dogs and husband, Steve!

Congratulations and we miss you both!

Teena Erwin
Congratulations to Becca Miller, Marian Cannova and Lingsong Zhang on their new positions here in the Department of Statistics!

Becca has been with the department since 2005. She served as the graduate secretary and is now the Office Manager/Building Deputy for HAAS. Becca enjoys going to church and playing with her two children, Bryce and Macie. Congratulations Becca!

Becca Miller

Marian has worked at the department since 2012. She worked as the Front Office Secretary and is now the secretary for the Statistical Consulting Service. She enjoys arts & crafts, embroidery, refinishing furniture and spending time with her children and grandchildren.

Marian Cannova

Congratulations to Lingsong Zhang on his recent promotion! Lingsong was promoted to Associated Professor with tenure.

Lingsong Zhang
The Glen E. Baxter Memorial Fund was established in 1983 by family and friends of Professor Baxter shortly after the premature death of this gifted teacher-scholar.

Annual proceeds from the fund are used to honor undergraduate students who have demonstrated excellence in mathematics. The recipients of the awards are selected by a committee of professors from the Department of Mathematics and the Department of Statistics.

Pictured, Left to Right: Mayfawny Bergmann—Undergraduate Statistics Major; Emeritus Professor Bob Zink—Math; Rebecca Doerge—Trent & Judith Anderson Distinguished Professor of Statistics, Head, Statistics
Statistics Alumni, Family, Friends, Faculty, and Staff:

Another school year is in the books! Purdue Statistics had another outstanding year under the leadership of our department head, Professor Rebecca Doerge! Our Statistics department continues to be one of the largest in the United States, and our graduates are carrying on their Purdue legacies by getting unique, prestigious positions after graduating. The faculty and staff both grew in size as well, and we are very proud of the progress we continue to make as a department!

Our alums supported Purdue Statistics in a major way with donations in 2014; in fact, the College of Science achieved the highest level of alumni giving out of any college during the 2014 Purdue Day of Giving. We also had several alums support the department with estate gifts, which help ensure the long-term success of the department. Both methods of giving have a tremendous impact on our current and future successes. If you have questions about giving back to the department, please reach out to me directly, as I am always happy to answer questions. Thank you to everyone who supported Purdue Statistics with a gift in 2014!

Let us know if your contact information has recently changed, as provide updates on the Statistics department on a regular basis. You can go online to [www.stat.purdue.edu], click on the “Alumni” option on the right side, then select “Update Information”. You can also join our Facebook group at [www.facebook.com/purdue statistics]. These are great ways to stay on top of what’s happening in the department!

Thanks again for making 2014 a special year for Purdue Statistics! Hail Purdue!

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