

Statistics Newsletter

Fall 2011

Department of Statistics, Virginia Tech

Greetings

by Eric Smith, Department Head

As you can see, there are many new faces in the departmental picture above. Not pictured are Ina Hoeschele, JP Morgan, Geoff Vining, and Leigh Williams.

I am pleased to report that the 2010-11 year has been another great year for the department. We continue to grow the department. Thanks to your support our graduate program continues to improve and expand. This year we are adding a new track in computational statistics that will include courses on data mining, advanced Monte Carlo methods, and stochastic modeling. Last year we graduated 24 Master's level students and 7 Ph.D. students. Our graduate students (we now have 88) continue to be recognized for their work. **John Szarka** was awarded the Mary G. and Joseph Natrella Scholarship from the Quality and Productivity Section of the American Statistical Association. Six other students were recognized for achievements in teaching, service and research. Our recruiting efforts continue to benefit from the devotion of our graduate coordinator, Jeff Birch; the financial support from our Corporate Partners; the Gibbons Fellowship; and staff support from Christina Dillon. This fall we add 30 new students to our program.

Our undergraduate program continues to grow too and we now have 78 undergraduates in the program. We have made several enhancements to the program to improve skills in programming, calculus and probability.

The department graduated nine students in the spring graduation and one in the fall.

Our Laboratory for Interdisciplinary Statistical Analysis (LISA) continues to expand its services and training of our students. This year we added some satellite offices on campus to provide consulting at locations other than Hutcheson Hall. The program has expanded its short course selections. The article below by Eric Vance discusses some of the other enhancements to the program.

Several faculty members in the department have been recognized for their research. **Yili Hong**, received the prestigious DuPont young investigator award. This is the first time the award has been given to a statistician. **Geoff Vining** was awarded the Shewart Medal from the American Society of Quality. The award recognizes Geoff's contribution to the area as well as his service to the organization. **Bill Woodall** was also honored for his accomplishments. He will be the conference honoree for the 29th Quality and Productivity Research Conference.

The department was able to add three new faculty members this year. **Xinwei Deng** joins us from a two-year postdoctoral position at the University of Wisconsin. He brings expertise on design of computer experiments, data mining and high-dimensional data analysis. Xinwei will help solidify our new computational track. We are also pleased to have hired **Jie Li** who joins us from Eli Lilly and Company. She received her degree from the University

of Iowa. Jie brings expertise on pharmaceutical statistics and will help expand our programs in biostatistics and spatial statistics.

Anne Ryan also joined the faculty this year. She will be working on developing collaborations with the Virginia Tech-Carillion Research Institute.



Finally, through your support we are able to help students through fellowships to entering and continuing students. The **Rose Costain** Award was given to Lucas Roberts. The **Ray Myers** award was given this year to Stephen Loftus for abilities in linear models and experimental design. The **Jean Gibbons** award is in its fourth year and provides money to enhance the education of a top graduate student. This year's recipient is **Andrew Hoegh**. We are grateful for the financial support to help with the recruiting and training of our students. As you are aware, our students are facing continued financial stress and we hope that you are able to continue your help in supporting our programs. Opportunities to contribute to various scholarships are described on the last page of the newsletter. Contributions to the general Statistics fund are also welcomed. And, don't forget to stop by for a visit if you are in the area. We'd love to hear about what you have done since we saw you last.

Undergraduates

Ten individuals received a Bachelors of Science degree in Statistics this year. There are currently 78 students in the undergraduate program.

In Fall 2010, **Austin Wagner** graduated.

In Spring 2011, nine undergraduates completed their degrees. They include **Allison Marie Kimball, Rebecca Elyse Galle, Chelsea Aleena Hickey, Nicholas Elliot Mountjoy, Julie Anne Terrell, Christy Nicole Cassarly, and Kayla Lamar** pictured to the right with Leigh Williams, undergraduate coordinator. Not pictured are **James Adam Howard** and **Jordan Scott Letchworth**.



The Whitfield Cobb Award is presented to the graduating senior with the highest academic performance overall. This year's recipient is **Kayla Lamar**.

The Clyde Y. Kramer Award is presented to a graduating senior who has shown outstanding service to the University and the broader community. This year's recipient is **Chelsea Aleena Hickey**.



Undergrad Internships & Research

The department has placed an emphasis on training and research experience. This year seven undergraduate students had internships or worked on research:

- Chang Liu with Freddie Mac
- Jason Dods with the Census Bureau
- Allison Moore with the U.S. Army Research Lab
- Elizabeth Kimball with Shrimp Improvement Systems
- Kim Roepe with BCF Solutions, Inc.
- Stephen Goode with Instructor Marlow Lemons
- Kelly Geyer with Professor Chris Franck

Scholarship Recipients

John H Kroehling Scholarship

Chi Yeung
 Elisabeth Adams
 Kaitlin Onthank

Marion & Charlotte Eckert Scholarship

Agata Bogacki
 Stephen Goode

Clyde Kramer Scholarship

Michael Gillespie
 Scott Terrell
 Chang Liu
 Chi Yeung



Marlow Lemons was recognized for his excellent teaching and concern for students by the Statistics Club.

Master of Science Graduates

The Fall 2010 Master of Science Graduates were **Daniel Leigh Campbell**, **Salman Arif Cheema**, **Md. Mahafuzur Rahaman Chy** (now a research statistician with PRA International), **Evan Jesse McNear**, **Devi P. Mishra** (now with Babcock & Wilcox company), **Hayley Anne Nelson** (now with comScore, Inc) **Rebecca Joy Perez** (now an instructor for the Department of Statistics, Virginia Tech), and **Alan Kimball Vaughn** (now with comScore, Inc.). **Chen Chen**, **Tianlei Chen**, **Rebecca Mae Dickinson**, **Yuanyuan Duan**, **Youjia Fang**, **Xinran Hu**, **Han Li**, **Hamdy Fayez Mahmoud**, **Yiming Peng**, **Jonathan Wesley Stallings**, and **Dengfeng Zhang** are continuing as Ph.D. students in the department. **Ram Thapa** is continuing his Ph.D. in Forestry here at Virginia Tech.

In Spring 2011, Master of Science degrees were awarded to **Jinhui Sun**, **Yangyi Xu**, and **Hui Yi** (now in GBCB here at Virginia Tech).

Pictured are Graduate Program Director Jeff Birch, Assistant Dean Janet Sanders, and Department Head Eric Smith. Dean Lay Nam Chang also visited during graduation.



Recruiting

Last spring a record number of students applied for admission to our graduate program. In all, 194 applications were reviewed, breaking the previous record of 159 set in 2003. Among those accepted into our program, our incoming class of 2011 consists of 34 students, 10 on full TA support. This is our largest incoming class ever.

The 2011 year begins with 88 graduate students, the largest number in our 62 year history.

Our graduate students are very bright, inquisitive, energetic, enthusiastic, and excited about learning. Our program continues to grow with more faculty, more students, and more new courses. It is really a great time to be part of the Department of Statistics at Virginia Tech.

Ph.D. Recipients

In Summer 2010, **Jonathan William Duggins** graduated with his Ph.D. He is now an Assistant Professor at the Department of Mathematical Sciences, Georgia Southern University.

In Fall 2010, two students graduated with their Ph.D.: **Jake Jonathan Zielinski** (Statistician/Operations Research Analyst, U.S. DOT: Volpe National Transportation Systems Center) and **Lu Wang** (Senior Biostatistician at Novartis Oncology).

In Spring 2011, four students graduated with their Ph.D.: **Anne Garrett Ryan** (Visiting Assistant Professor, Statistics, Virginia Tech), **John Szarka III** (Statistician, W. L. Gore), **Matthew Williams** (USDA National Agricultural Statistics Service), and **Jinsong Chen** (post-doc, Statistics, University of Virginia).

Details of their Ph.D. dissertations are:

Jinsong Chen (2010)
Title: Semiparametric Methods for the Generalized Linear Models
Chairman: George Terrell and Inyoung Kim

Jonathan W. Duggins (2010)
Title: Parametric Resampling Methods for Retrospective Change-point Analysis
Chairman: Eric P. Smith

Anne Ryan (2011)
Title: Surveillance of Poisson and Multinomial Processes
Chairman: Bill Woodall

John Szarka III (2011)
Title: Surveillance of Negative Binomial and Bernoulli Processes
Chairman: Bill Woodall

Lu Wang (2010)
Title: Cure Rate Model with Spline Estimated Components
Chairman: George Terrell and Pang Du

Matthew Williams (2011)
Title: Likelihood-Based Testing and Model Selection for Hazard Functions with Unknown Change-Points
Chairman: Dong-Yun Kim

Jacob J. Zielinski (2010)
Title: Adapting Response Surface Methods for the Optimization of Black-Box Systems
Chairman: Geoff Vining

A new Ph.D. track: Computational Statistics

Modern statistical techniques tend to be highly algorithmically and computationally oriented. Abilities in numerical methods, computer programming, and algorithm construction and utilization are essential for the contemporary statistician. The Computational Track for the Ph.D. allows the student to specialize in these abilities and to prepare for a research career in computational statistics.

The goals for this new track are: (1) to give graduates of this program the fundamentals of modern statistical computational theory, methods and techniques and (2) to train students capable of developing new theory, methods, and

techniques in computational statistics.

The program requirements for the Computational Track are to meet the general course requirements for the Ph.D. in statistics and take all of the following computationally oriented courses: STAT 5304: Statistical Computing; STAT 5314: Advanced Monte Carlo Methods; STAT 5444: Bayesian Statistics; STAT 5525 (CS 5525): Data Analytics I; STAT 5526: Data Analytics II; STAT 6124: Stochastic Modeling and Inference. Courses STAT 5314, 5506, and 6124 are new courses and will be taught for the first time over the next two years. Course description for each of these courses may be found

at

www.stat.vt.edu/students/courses.html.

One additional requirement is that the topic(s) of the dissertation must be related to the Computational Track and must be approved by the student's dissertation committee. There are now five Ph.D. tracks one may pursue. The other four are the traditional, the environmental, the industrial, and one in bioinformatics. A complete description of all tracks may be found in the Department of Statistics Graduate Program Handbook, at www.web-e.stat.vt.edu/dept/web-e/pdf/Req_degree_10_15_10.pdf.

Communication in Statistical Collaborations

by Eric Vance

Approval from the College of Science has been granted for the new, 3-credit course, "Communication in Statistical Collaborations." This course replaces the statistical consulting course, and is for all undergraduate statistics majors and graduate students within the department.

Taught by Eric Vance, the Director of LISA (Virginia Tech's Laboratory for Interdisciplinary Statistical Analysis), the aim of the course is to teach statisticians everything they need to know to be effective interdisciplinary

collaborators that they don't learn in their regular statistics classes.

Students will learn and practice skills in listening, asking good questions, managing an effective statistical collaboration meeting, giving effective feedback, assimilating peer feedback and self-reflection in their work, summarizing scholarly articles, and explaining and presenting statistical concepts to a non-



Students observing a live collaboration meeting during a class session

statistical audience graphically, orally, and in writing. The course culminates in the write-up and presentation of a final project applying statistics to answer a real scientific problem. Pairs of students collaborate with a non-statistician of their choosing on a research project they find interesting and present their results and experience to the class.

Ideas from alumni for improving this course are always welcome.



Students in the 2010 Communication in Statistical Collaborations Class

Graduate Awards

by Jeffrey Birch, Graduate Program Director

On a national level, **John Szarka**

(Ph.D., 2011) has been awarded the Mary G. and Joseph Natrella Scholarship from the Quality and Productivity Section of the American Statistical



John Szarka

Association. The award is given for research contributions to the field of quality. In fact, our graduate students have won the Natrella award in eight out of the past eleven years, competing against nominations from the entire country. In addition to a cash award, John was given the opportunity to present some of his dissertation research at the 2011 Quality and Productivity Research Conference (QPRC) in June, all expenses paid. The fact that our department has won this award and other industrial related awards repeatedly speaks to the reputation of the industrial component of our graduate program.

To help recognize the important contributions made to our graduate program, the Department of Statistics annually presents six awards to our graduate students for their special contributions in the areas of academics, teaching, service, and citizenship.

With these awards comes a certificate and the recipient's name is placed on a plaque, which is displayed outside the main office door. Two awards also include a book of the recipients' choice and the four awards include a sizable financial gift, made possible by generous financial contributions from friends of the department.

The Boyd Harshbarger Award is given annually for superior academic performance by a first

year student. The award is named after our department's founder and first department head. The winner for superior academic performance by a first year student is **Liang Shan**.

One of the criterion for the award is grade point average and Liang had a near-perfect 3.96 gpa in all her first year courses, and the highest score on the spring qualifying exam.

Due to the donations of the Harshbarger family, Liang will also receive a generous financial gift.



Liang Shan

The Jesse C. Arnold Award is given annually for outstanding teaching by a graduate



Anne Ryan

assistant. Dr. Arnold was our department's second department head. The winner for outstanding teaching by a graduate

teaching assistant is **Anne Ryan**. Last year, Anne taught two classes for us, achieving a 3.85 (on a 4.0 scale) rating from the students, the highest rating among our TA teachers.

The Klaus Hinkelmann Award is given annually for outstanding service by a graduate student to the department. Dr. Hinkelmann was our department's third department head. The winner for the Hinkelmann award for outstanding service to the department is **Mark Seiss**. For the past three years, Mark served LISA as a lead collaborator. He has

Overview of Awards

The Boyd Harshbarger Award is given for outstanding academic achievement by a first year graduate student. This year's recipient is Liang Shan.

The Jesse C. Arnold Award is given for outstanding teaching by a graduate teaching assistant. This year's recipient is Anne Ryan.

The Klaus Hinkelmann Award is given for outstanding service by a graduate student to the department or university. This year's recipient is Mark Seiss.

The Raymond Myers Award is given to the top student in Linear Models and Experimental Design. This year's recipient is Stephen Loftus.

The Gibbons Statistics Award is given to an outstanding first year Ph.D. student in statistics. This year's recipient is Andrew Hoegh.

The Costain Award is given to an outstanding graduate student citizen in the Department of Statistics. This year's recipient is Lucas Roberts.

met with over 100 clients in LISA and has provided excellent service, has taught 5 short courses on statistical topics for graduate students in other departments to help them apply statistics in their research, and has helped over 70 people with short questions about statistics during LISA



Mark Seiss

Walk-in Consulting. This past summer, Mark served as the "on-the-ground" statistician on an interdisciplinary research team for the Mozambique water project.

Graduate Awards

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He followed the Mozambican survey teams from village to village, slept in a tent in communities with no electricity and no running water (in fact, many of the villages got their water from mud puddles, no exaggeration!). He helped with data collection and analysis and gave the survey teams feedback on the errors and potential outliers and questionable missing values. He created the data tables the team sent to the project funders in Washington DC. All these efforts were very successful, added immense value to the project, and will likely (hopefully) lead to important statistical research and publicity for the department.

The fourth award is named the Ray Myers Award is given to the outstanding student in the linear models and design of experiments courses. Dr. Myers taught linear models and response surface methodology for many years in our department and used linear models and design of experiments heavily in his research and books. The

winner of the award is **Stephen Loftus**. Stephen was one for the top students in both the linear models course and the design of experiments course and had one of the top scores on this portion of the spring Qualifying Exam. The award includes a sizable financial gift.



Stephen Loftus

The Rose Costain award is named after Rose Costain who worked in our department for 17 years as an administrative assistant for the graduate program and as an editorial assistant for two journals edited by departmental faculty, *Biometrics* and *The Journal of Statistical Computation and Simulation*. Her



Lucas Roberts

work helped to foster a friendly and caring attitude within the graduate program. The award is given to a graduate student for outstanding citizenship to the department. The recipient for the Rose Costain

Award is **Lucas Roberts**. The award includes a generous financial gift. Lucas has taught three different courses for the department over the past two years, is leading the TA Teaching Mentoring Workshop this year, and served as host and recruiter to many of the current graduate students to our program.

Recruiting top students is necessary to maintain the quality of our department. To help us in this regard, we have the Jean Dickinson Gibbons Statistics Award, made available by the



Andrew Hoegh

generous contribution of Dr. Jean Gibbons and her husband Dr. Jack Fielden. Dr. Gibbons received her Ph.D. from our department in 1962. This award is presented to the 2011 outstanding first year Ph.D. candidate in statistics. The recipient of this award is **Andrew Hoegh**. Andrew has a BA in math from Luther College and MS in applied statistics from the Colorado School of Mines.

Graduate Internships

by Jeffrey Birch, Graduate Program Director

This summer seven of our M.S. and Ph.D. students worked as interns for a broad variety of organizations. These students and their companies are:

- Joel Anderson with NASA
- Chao Han with AT&T Labs
- Gabiriela Marquez Betz with Pfizer Animal Genetics
- Keston Pierre with the Federal Communications Commission
- Austin Rhodes with Pfizer
- Carly Siegal with 3M
- Daniel Whitehead with the Census Bureau.

As an intern, our students not only gain valuable

experience as a practicing statistician but they are paid a competitive salary. Additionally, for each month of intern experience the student can receive one academic credit that applies toward their degree. To receive academic credit the intern needs two mentors, a faculty member within our department and their work supervisor. The student must summarize their intern experience by writing a technical report on their work accomplishments and present their intern experiences in a seminar to the students and faculty of the department. These reports are evaluated and graded by their mentors. Thus, a summer internship can result in a three-credit graded course, one that can be used as an elective in the student's program of study.

Suitland Children's Chess Invitational



Two fourth-grade students contemplate their next moves.



Marlow Lemons having a practice chess match with a contestant.



Statistics club members who volunteered at the Suitland Children's Chess Invitational. From left to right: Christy Cassarly, Chelsea Hickey, Allison Parker, Marlow Lemons, Kayla Lamar, and Elliot Mountjoy



Marlow Lemons presents trophies to a few of the winners from the chess invitational

The Statistics Club

by Kayla Lamar, Statistics Club 2010-2011 Vice-President

The Statistic Club at Virginia Tech was reinstated during the 2010 spring semester. We have established ourselves as a community service based organization involving statistical applications wherever possible. Since we reinstated the club we have worked on some new projects. In the spring of 2010 we helped the AP statistics students at Blacksburg High School prepare for their AP exam. Four or five members at a time would go to the high school during the AP Statistics class time in order to help get the students motivated for the AP exam and answer any questions that they had. During this semester we also went to Park View High School to assist with Viva Technology's Student Day where we served as "near peer" role models who could share our college experiences to the students who participated in the program. There we partnered with the Central Intelligence Agency to help show the students all of the possibilities that further education could bring them. Also, throughout the 2010-2011 school year we have also had a number of speakers from different organizations including the GAO, NIH, and IRS. These speakers

gave insight into their roles as statisticians in their organizations. The big project that the Statistics Club worked on this year was hosting the Suitland Children's Chess Invitational in Suitland Maryland on April 1, 2011. We coordinated this project in conjunction with the Partners in Education program of the Census Bureau, Eagle Chess Academy, and the Suitland Community Center. Fourth, fifth, and sixth grade students from the Suitland area participated in the five round chess tournament. Awards were given to the top ten students in each grade level. Both the students and parents gave positive feedback about the event and we would like to host a tournament again. The Statistics Club hopes to be able to perform some analysis with the data we have collected from the event.

2011-2012 Statistics Club Officers

Nick Kaelin - President

Allison Moore - Vice-President

Christine Rand - Secretary

Andrew Wannamaker - Treasurer

Rebecca Rosenberg - Public Relations Officer

Statistician Yili Hong named DuPont Young Professor

by Catherine Doss, College of Science

Yili Hong, assistant professor of statistics in the College of Science, has been named a DuPont Young Professor for 2011.

Hong was one of only 18 such professors named from 11 U.S. universities and six universities around the world.

DuPont awarded \$1.3 million to the 2011 class of young professors; each will receive \$75,000 over three years. Grants may be used to obtain matching funds through the National Science Foundation or other organizations.

Hong's areas of research are statistical reliability; industrial statistics; survival analysis, and biostatistics. Research by the class of 2011 Young Professors includes solar energy, biomolecular sciences, polymer science, nanotechnology, entomology,

chemistry, chemical engineering, statistics, animal biology, and life sciences.

"The DuPont Young Professor program is a way to identify talented researchers and promising science early in a new professor's career," said DuPont Senior Vice President and Chief Science and Technology Officer Douglas Muzyka. "The grants encourage highly original research of value to DuPont while helping the young professors begin their academic research careers."

Eric Smith, chair of the Department of Statistics said, "The department is very pleased that DuPont has recognized Yili's accomplishments with this award. Yili has already established himself as an excellent teacher and researcher. This award will allow him to continue pioneering research in our



Yili Hong, DuPont Young Professor for 2011

department, one of the oldest statistics departments in the country.

The partnership between Yili and DuPont promises to result in significant contributions in the area of industrial and medical reliability and advance Virginia Tech's prominence in industrial and engineering statistics."

First Year Float

by Eric Vance

Saturday, August 27th, was the 3rd annual Department of Statistics First Year Float. Fourteen first-year students, two returning students, one friend of a first-year, and two faculty members attended.

"LISA pays for the tube rental for all first-year students," said Eric Vance. "It's a great way for them to bond with each other outside of the classroom and before classes become too intense. It's also a great opportunity for them to interact with returning students and faculty members."

"I attended the First Year Float and it was a good experience for me. Because I spend most of my time

doing homework and studying these days, it was a great opportunity for me to release my stress. In addition, I could see beautiful mountain, river and blue sky. These made me feel that I am in the center of pure nature far from hectic life. After floating, I had lunch prepared by LISA and it was also good. Actually, there was a Korean party on that day, but I decided to go floating instead of attending the party. I think it was a great choice!" said Ho Cho, first year student from South Korea.

"I hope this annual event will continue to grow as a great introduction to the department and will attract more faculty and staff next year," said Vance.

"It was the first time I'd ever gone,"



said third-year student Jonathan Stallings. "I thought it was a great success and I want to go again."

Next year's event will again be held at noon at the New River Junction (<http://newriverjunction.com>) on the first Saturday in the Fall semester after classes have started, the day after the departmental picnic. Andy Hoegh offers three pieces of advice for future attendees: "Sunscreen, Sunscreen, and Sunscreen."

Dong-Yun Kim receives grant for Patient-Centered Medical Home pilot study

by Barbara Michale, National Capital Region

Virginia Tech's Arlington Innovation Center: Health Research in the College of Science has awarded a grant to Dong-Yun Kim, assistant professor, Department of Statistics, to conduct a pilot study for Patient-Centered Medical Home assessment.

Patient-Centered Medical Home (PCMH) is a newly emerging model for primary care, delivering personalized, coordinated services to patients. This new model depends on extensive use of electronic medical record and re-engineering of work processes.

Kim says she plans to take a data-driven approach to develop a conceptual framework to facilitate the assessment. In this pilot study she will catalogue the list of

available clinical data from PCMHs; identify key instruments that may help measure the outcome of PCMH; summarize and describe identified instruments using visual and descriptive statistical tools; recommend additional instruments if necessary; and outline several strategies suitable for outcomes assessment.

"The conversions of primary care practices to certified Patient-Centered Medical Home are costly investments to improve the quality and outcome of care. This research will help Carilion to deliver the best possible primary care throughout the region," said Seong K. Mun, professor and director of the Arlington Innovation Center, which will soon be housed in the



Dong-Yun Kim, recipient of grant to study PCMH care

new Virginia Tech Research Center — Arlington. "Dong-Yun's pilot study could also lead to full-scale proposals for Patient-Centered Medical Home assessment to external granting agencies and serve as groundwork for Interdisciplinary Graduate Education Program application within Virginia Tech."

Mu Sigma Rho

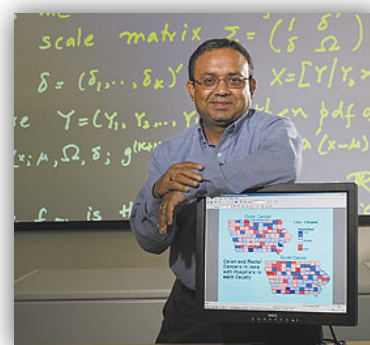
by John Szarka

The Mu Sigma Rho colloquium series this past year continued to provide two memorable talks from our honored guest speakers. Dennis Lin, a Distinguished Professor of Statistics and Supply Chain at Penn State University visited the department last November. Lin is well-respected in many areas of his field and enjoys business, industrial, and



government (BIG) Statistics, which was the title for his talk. The content of his colloquium regarded recent developments and issues in these systems where he was truly engaged with the audience who enjoyed his unique and entertaining presentation. Lin met with a group of graduate students to discuss many issues regarding the pursuit of academic careers and provided many helpful tips on the interviewing process.

Dipak Dey, a Distinguished Professor and Associate Dean of the College of Liberal Arts and Sciences at the University of Connecticut joined us for his presentation in April. He is highly regarded and motivated in his research area, which includes Bayesian analysis, bioinformatics, and computational statistics among



many other areas. Dey's talk was entitled "Intervention Analysis of Hurricane Effects on Snail Abundance in a Tropical Forest Using Long-Term Spatiotemporal Data." In the past two decades, major hurricanes in Puerto Rico that have struck provided research opportunities to understand the long-term effects for a number of species. It was a wonderful talk to attend. Dipak Dey also met with graduate students to discuss a variety of topics during his visit.

Vining Awarded Shewhart Medal

by Catherine Doss, College of Science

G. Geoffrey Vining, professor of statistics in the College of Science has been awarded the Shewhart Medal from the American Society for Quality.

The medal is the highest award for technical leadership in the field of quality control. It is presented annually to an individual who has made the most outstanding contributions to the science and techniques of quality control or who has demonstrated leadership in the field of modern quality control.

"I am both humbled and honored to receive this award," Vining said. "The list of past winners is extremely distinguished, filled with people who truly made significant contributions to the improvement of industrial quality, productivity, and reliability."

"The award recognizes the exceptional contributions Geoff has made in industrial experimental design for the past 20 years," said Eric Smith, professor and department head. "It also shows that Virginia Tech continues to be a leader in the area of industrial statistics."

Vining's research areas include experimental design and analysis for quality improvement, response surface methodology, and statistical process control. He has won numerous professional awards, authored and co-authored several books, and has been editor of the *Journal of Quality*

Technology. In 1990, he received the Brumbaugh Award for the most influential paper published in an *American Society for Quality Journal*. He received his Ph.D. in 1988 and returned to the university in 1999 as head of the statistics department.

Vining is the fifth Ph.D. graduate from the Department of Statistics to have won this prestigious award. The other four are: Emeritus Professor Ray Myers and Bill Woodall, professor of statistics, both from Virginia Tech; Emeritus Professor John Cornell from the University of Florida; and Doug Montgomery, Regents Professor of Industrial and Systems Engineering at Arizona State University.

Myers, who joined the department as an assistant professor in 1962, advised and mentored all four of the other Shewhart winners from the department.

By the time he retired in 1995, Myers had directed the research of 42 Ph.D. students, was a well-published researcher, authoring or co-authoring numerous books and journal articles, and was a popular teacher, winning the Wine Award for Teaching Excellence in 1980 and Virginia Professor of the Year in 1985. Recently, Myers endowed a fellowship award for worthy students in the department. **Liaosa Xu, of Lhasa, China**, a Ph.D. student, was the first recipient.



Geoff Vining, winner of the Shewhart Award from the American Society for Quality (ASQ)

"Ray is the best lecturer I have ever known," Woodall said. "I think many of his students would consider him to be the best teacher they ever had."

In fact, former student Angela N. Patterson, now with GE Global Research, published "A Conversation with Ray Myers" in the journal *Quality Engineering* last year.

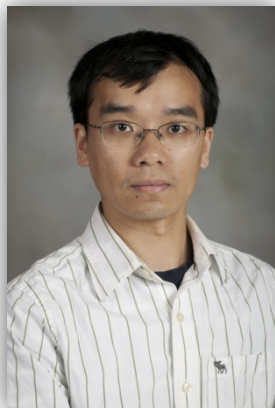
"Working with Ray when I was a student gave me a solid foundation in the industrial applications of statistics," Vining said. "He was one of the first people I called to thank when I learned I had received the award."

In addition to the Shewhart Medal, Geoff Vining was recently elected as the Vice-Chair of the Division Affairs Council and as a National Director for the American Society for Quality (ASQ).

Welcome to the New Faculty

by Yili Hong, Bill Woodall, and Anne Ryan

The Department is delighted to announce that Xinwei Deng has joined us this semester as a new tenure-track assistant professor. Xinwei obtained his Ph.D. from Georgia Tech in the School of Industrial and Systems Engineering in August of 2009 under the direction of Professors C. F. Jeff Wu and Ming Yuan. Since his graduation, he has been a Visiting Assistant Professor in the Department of Statistics at the University of Wisconsin-Madison.



Xinwei's interests include the modeling and analysis of high-dimensional data, experimental design approaches to machine learning methods, machine learning and computational statistics, covariance matrix estimation and its applications, and statistical methods applied to nanotechnology. He has publications in *Contemporary Mathematics*, *Proceedings of the National Academy of Sciences*, the *Journal of the American Statistical Association*, *Nanotechnology*, and the *Journal of Computational and Graphical Statistics*.



Anne Ryan joined the department as a Visiting Assistant Professor this fall. Anne earned her Ph.D. from our department this past spring under the supervision of Professor Bill Woodall. Her dissertation research was in the area of surveillance for multinomial and Poisson processes.

Anne's plans to continue her research in statistical process control and health care surveillance and also will work as a faculty collaborator for the Laboratory for Interdisciplinary Statistical Analysis (LISA). She will be teaching the graduate level statistics in research class this fall.

Jie Li joined the department as a Research Assistant Professor this summer. Jie earned her Ph.D. from University of Iowa in 2009, under the supervision of Professor Dale Zimmerman. Her dissertation research area was on spatial statistics with focus on multivariate spatial designs on the plane and on stream network. Prior to join the department, Jie was working in the pharmaceutical industry. She worked for Eli Lilly for one and half years as a research scientist and for Merck for a half year as a biometrician, working in early phase of clinical trials for oncology and diabetes.



Jie's areas of expertise are in spatial statistics, design and analysis of clinical trials, and biostatistics. She will be doing research on spatial statistics and biostatistics. She is particularly interested in conducting interdisciplinary research; solving problems arising from fields such as medicine, biology, geography, and agriculture. She will be teaching biostatistics for the public health program at Virginia Tech this fall.

Woodall to be Honored at the 2012 QPRC

The 29th Quality and Productivity Research Conference will be held in Long Beach, CA on June 4-7, 2012. The goal of the conference is to stimulate interdisciplinary research among statisticians, scientists, and engineers in quality and productivity, industrial needs, and the physical and engineering sciences. Statistical issues and research approaches drawn from collaborative research will be highlighted

Bill Woodall has been named as the conference honoree. Bill is a prolific researcher of statistical methodology in the area of statistical quality control and improvement, including health-related monitoring and prospective public health surveillance. He has held editorial positions for the *Journal of Quality Technology and Technometrics*, and has directed or co-directed dissertation research for 28 Ph.D. students. Bill is an elected fellow of the American Statistical Association, the American Society for Quality, and the International Statistical Institute.



LISA On-the-ground Statisticians in Mozambique

by Eric Vance

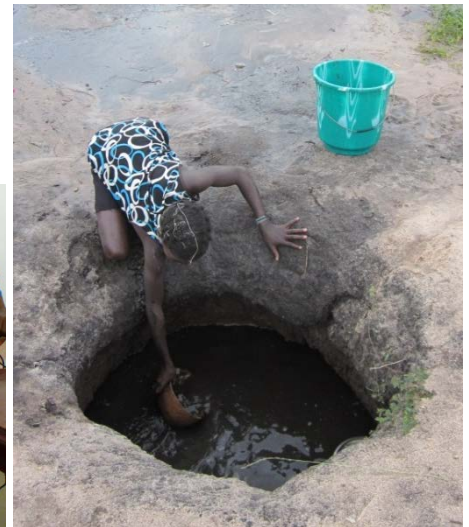
What are the health, economic, and quality of life impacts achieved when ones daily source of water improves from scooping water from a far away mud puddle to pumping it from a clean, nearby underground source? To find out, Eric Vance and Mark Seiss from LISA (Virginia Tech's Laboratory for Interdisciplinary Statistical Analysis) traveled with Ralph Hall from Virginia Tech's Department of Urban Affairs and Planning to southern Africa. Dr. Hall led an interdisciplinary research team to evaluate the impacts of the Millennium Challenge Corporation's (MCC) rural water project in Mozambique. The MCC is a U.S. government aid

organization funding \$507 million of investments to aid economic development in northern Mozambique, including the drilling and installation of approximately 600 hand pumps in rural villages that currently lack basic access to clean water.

As on-the-ground statisticians, Eric Vance and Mark Seiss were involved in all aspects of the baseline study for this ongoing project, starting from the study design stage, through the data collection and data preparation phase, to the current stage of statistical analysis. A new group of students has begun preparations for a return to Mozambique in 2013 for the follow up study that will determine the impacts of the MCC rural water project.



Measuring a child to determine health



Collecting water from a water source



Interviewing a woman during the pilot study



Training the enumerators on the PDA's used during the household interviews

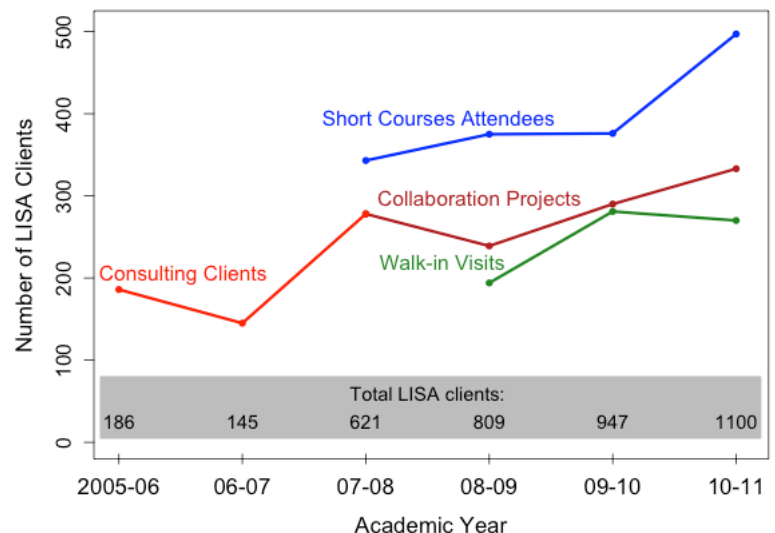
Want to read more about Eric and Mark's adventures in Mozambique and see a visual overview of the project? Visit their blog at www.lisa.stat.vt.edu/?q=blog

LISA helps more clients than ever before in 2010-2011

by Eric Vance

LISA's mission is to promote statistical collaboration by training statistics students to become interdisciplinary collaborators and by demonstrating the value of statistical thinking in research. We provide statistical advice, analysis, and education to Virginia Tech researchers by offering individual collaboration meetings, walk-in consulting, educational short courses, and support for interdisciplinary research projects. In summer 2008, LISA began offering short courses designed to teach graduate students statistics they can use in their research. In fall 2008, LISA began referring to statistical consulting meetings as "collaboration meetings" and simultaneously offered a new service, walk-in consulting, to answer quick questions about statistics. In 2010-11, LISA met with 333 researchers from over 60 departments for collaboration meetings, helped 270 visitors during walk-in consulting, and taught 497 short course attendees how to apply statistics in their research. These 1100 clients were the most LISA has ever helped in a year.

Annual LISA Clients AYs 2005-11: Consulting, Collaboration, Walk-in, and Short Courses



Innovative Strategies for Incorporating Consulting into Graduate Education at JSM

by Eric Vance

On August 3, 2011, Eric Vance and Mark Seiss from the Department of Statistics gave invited talks at the Joint Statistical Meetings in Miami Beach in the session, “Innovative Strategies for Incorporating Consulting into Graduate Education.”

Vance’s talk, “Training Statisticians to Become Interdisciplinary Collaborators,” explained the model LISA (Virginia Tech’s Laboratory for Interdisciplinary Statistical Analysis) uses to train graduate students to become effective, collaborative statisticians. The typical student receives classroom training in the theory and methods of statistics and in communication in statistical collaborations. The next step is to work as an Associate Collaborator in LISA, contributing in meetings with clients and learning how to perform statistical analyses that will answer the client’s research questions. Students in their third, fourth, or fifth year take on more of a leadership role in interactions with clients, with some students

being promoted to the position of LISA Lead Collaborator. Ideally, the training culminates with a capstone international experience of a short-term exchange of statistical collaborators with a foreign university, a position helping to build statistics capacity in a developing country, or as an on-the-ground statistician for an international research project. A version of this talk can be found at www.lisa.stat.vt.edu/?q=about_us

Mark Seiss’ talk, “Tales from Mozambique as an ‘on-the-ground’ Statistician,” explained his role in an interdisciplinary project studying the impact of drilling borewells and installing handpumps in rural villages in Mozambique that did not have access to clean water. During his 10 weeks in the field, Mark traveled with survey teams from village to village, downloaded over 1600 household interviews from the teams, analyzed the data in the field, gave feedback to the survey enumerators about errors they made or may have made, corrected the errors, and generated tables and graphs of the data every



Mark Seiss, chair Steve Naber, Eric Vance, Xiao Chen, Doug Zahn, and Nagaraj Neerchal

week to provide the funding agency in Washington, DC informative updates on the project.

The other speakers in the session organized by Christopher Holloman from Ohio State University were Xiao Chen from UCLA talking about their extensive and amazing website for statistical consulting www.ats.ucla.edu/stat and Nagaraj Neerchal from UMBC speaking about the entrepreneurial aspects of his statistical consulting center. Doug Zahn, professor emeritus from Florida State, was the session’s discussant.

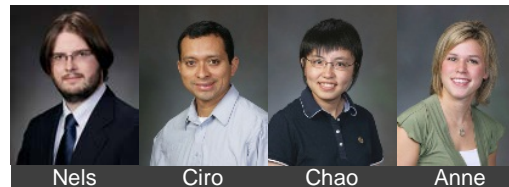
Corporate Partners Program

by Golde Holtzman

The twelfth annual Corporate Partners Conference is planned for October 27 through 29. In addition to our continuing corporate partners—Becton Dickinson, Capital One, DuPont, Eli Lilly, General Electric, Minitab, Pratt & Whitney, R.J. Reynolds, and SAS—we will also be visited by representatives of Eastman Chemical and Merck. As always, the conference will be 50% business, 50% pleasure, and 100% synergy. We’ll be taking care of business with partner presentations, the Mu Sigma Rho Graduate Research Seminar, interviews for internships and

professional positions, and strategic planning of curriculum and research initiatives. We’ll be pausing for refreshment at two faculty homes. The synergy manifests through the constant interaction of students, faculty, corporate partners, alumni, and our dean. More than ever, the students will be taking a leadership role—this year by Jonathan Stallings, Rebecca Dickinson, and Ana Maria Ortega Villa. For further information about the corporate partners program, see the website, or contact Professor Golde Holtzman (holtzman@vt.edu, 540-239-2949).

2010 Mu Sigma Rho Graduate Student Research Seminar



The 2010 Mu Sigma Rho Graduate Student Research Seminar was chaired by John Szarka, organized by Professors Scotland Leman and Feng Guo, and featured presentations by Nels Johnson (Measurement errors in matched case-control studies), Ciro Velasco-Cruz (Spatial model selection), Chao Han (Interactive clustering for high dimensional data using Bayesian visual analytics), and Anne Ryan (Control chart methods for Poisson count data with varying sample sizes).

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Contributing to the Department

by Eric Smith

The faculty have worked hard to improve the program over the last four years. Our success has been greatly enhanced by the generous support of alumni and friends. We are extremely grateful for contributions from Dr. Jean Gibbons, Dr. Ray Myers, and John Costain.

support regardless of the size of the contribution.

If you wish to discuss opportunities for supporting graduate students or faculty through your contributions please feel free to give Dr. Smith a call.

Your support and encouragement is greatly appreciated!

We can greatly benefit from your

Contributing to the department is easy. Simply detach the form below and mail it to the Office of University Development with your contribution.

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