Winter 2008

NISS Parameters

A quarterly newsletter update from the National Institute of Statistical Sciences

NISS Celebrates New Wing with Open House and Ribbon Cutting

On November 7, NISS celebrated the opening of a new wing to its building in Research Triangle Park with a ribbon-cutting ceremony and open house. Nearly 80 people were on hand from academia, government and industry to join in the festivities. Attendees heard greetings from the directors of NISS and SAMSI, the chairs of NISS Board of Trustees and the SAMSI Governing Board, and Peter March of the National Science Foundation. People enjoyed the smooth jazz sounds of the Elder Brothers while they ate hors'd'oeuvres and toured the new wing.

Left to right: James Berger, director of SAMSI, Daniel Solomon, North Carolina State University, chair of the SAMSI Governing Board, Alan Karr, director of NISS, Peter March, director of the Division of Mathematical Sciences at the National Science Foundation, and James Landwehr, Avaya Labs Research, chair of the NISS Board of Trustees.

In his "speak softly and carry big scissors" (for the ribbon cutting) remarks, NISS Director Alan Karr singled out several people who played pivotal roles in creating NISS and the original building, including Ingram Olkin, founding Director Jerry Sacks, and Dan Horvitz, the Interim Executive Director of NISS

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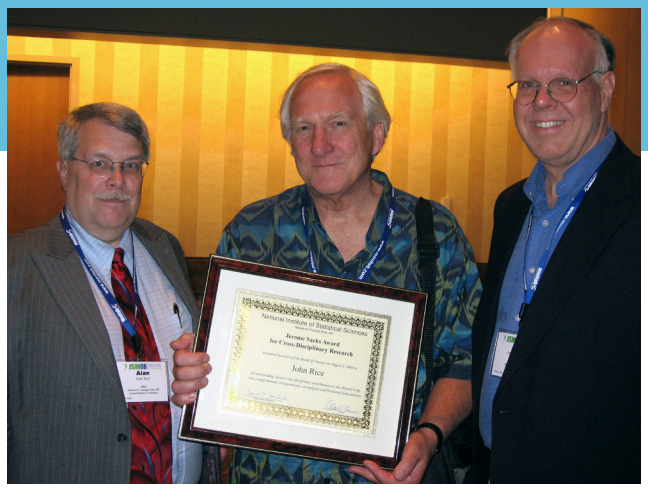
Almost 80 people came to celebrate the opening of the new wing of the building at NISS.

NISS Chairman James Landwehr speaks at the ribbon cutting event.

Daniel Solomon, Dean of the College of Physical & Mathematical Sciences at NCSU, chair of the SAMSI Governing Board and NISS Trustee, shares a story at the ribbon cutting.

Rice Wins 2008 Sacks Award



Alan Karr(L), and James Landwehr (R), present the Sacks Award to John Rice.

John Rice, Professor and Chair of the Department of Statistics at the University of California Berkeley, won the 2008 Jerome Sacks Award for Cross-Disciplinary Research. The award was presented to Rice at a NISS reception held August 4 at the Joint Statistical Meetings (JSM) in Denver, Colorado. Alan Karr, Director of NISS, and Jim Landwehr, Chairman of the Board of Trustees for NISS, were on hand to give the award to Rice.

Rice was recognized for his outstanding, diverse cross-disciplinary contributions to ion channel receptors, energy demand, transportation, astronomy and functional data analysis. Among Rice's many achievements is the highly regarded book, ***Mathematical Statistics and Data Analysis*** (2nd edition, 2006).

The Jerome Sacks Award for Cross-Disciplinary Research was established by the Board of Trustees in 2000 to honor Sacks' service as the founding director of NISS, a capacity in which he served from 1991-2000. The annual prize of $1,000 recognizes sustained, high-quality cross-disciplinary research involving the statistical sciences that exemplifies the NISS mission to identify, catalyze and foster high-impact, cross-disciplinary research involving the statistical sciences. The recipient's name is also added to a plaque that is housed at NISS.

"I am very surprised and honored to receive this award. Jerry Sacks is a pioneer in cross-disciplinary research, and I think that it is wonderful that NISS has an award named for him. Interestingly, my work in transportation, which deals with measuring traffic flow on freeways, began with my involvement in the NISS transportation project in the 1990s. Thanks to NISS for the award and to all of you for being here at this ceremony," remarks Rice.

Past winners of the Sacks Award can be found on the NISS website.

Fooled by Randomness? – Young Raises Deep Issues

Stan Young, Assistant Director of Bioinformatics at NISS, is conducting a far-reaching campaign to inform and educate statisticians, disciplinary scientists, journal editors, attorneys and others about issues relating to multiple testing in large observational studies and drug safety. His efforts have included:

- Organizing a session at the 2008 Joint Statistical Meetings (JSM) in Denver that that featured Nassim Taleb, author of ***Black Swan: The Impact of the Highly Improbable***
- An interview on ***Radio InVivo***, a scientific program on WCOM, a community radio station based in Carrboro, North Carolina that is also broadcast on the Internet. People interested in listening to the podcast of this program can link to: http://www.ibiblio.org/wcom/podcast/#radioinvivo.
- Presentations to the Philadelphia Section of the American Statistical Association and the Triangle Area Research Directors Club (TARDC).
- Meetings with a group of patent attorneys in Raleigh to educate them about the causes and consequences of false positives.

Young speaks to a group of patent attorneys in Raleigh to tell them about the complications that abound from multiple testing.

Young has a long-standing interest in multiple testing and is the author of a major book on the subject. Recent events, including withdrawal of drugs from the market and published reports that as many as 90 percent of the results of observational studies cannot be replicated, have stimulated his current activities. Simultaneously, he has become a leading advocate for sharing of data underlying scientific papers, in order to permit alternative analyses that advance the scientific enterprise.

Education:

Kenan Fellow

NISS Funded Kenan Fellow Inspiring Middle School Students to Think Critically

Getting middle school-aged children to concentrate on anything can be an achievement. Several studies show that many girls also tend to lose their interest in science and mathematics during these years. But Wakefield Middle School science teacher, Daniell DiFrancesca, a Kenan Fellow sponsored by NISS and SAMSI, is developing a program to get children to think critically and participate more fully in her science class.

NISS Associate Director Nell Sedransk is mentoring DiFrancesca on a project entitled **Critical Thinking in Science**.

"The whole project is about critical thinking for middle school students in science," said DiFrancesca, "My plan was to design lessons that incorporated critical thinking throughout the entire year so they will be better prepared to enter high school."

Some of the subjects students in the eighth grade study in North Carolina include chemistry, oceanography, cells, microbiology and evolution and ideological history.

DiFrancesca worked with Sedransk to think about what qualities each lesson needs to have to get kids to think critically, what makes them do it and incorporate those into each content area.

"We developed a vocabulary they would need, explained what parts of a good experimental design and taking those and putting them into the water unit, and using what they learned there and expanding it to use in other areas, like chemistry," explained DiFrancesca.

The Kenan Fellows program pairs mentors from the NISS and SAMSI community with K-12 public school teachers who have been selected to be Kenan Fellows. The program's goals include promoting teacher leadership, developing and disseminating exciting new curriculum in science, technology, and math education, and addressing the problem of teacher retention in public schools. This is the first year the program is underway at SAMSI and NISS.

SAMSI Associate Director Michael Minion is mentoring Jenny Rucker to develop experiment-based mathematics curriculum centered on table top fluid dynamics experiments this year as well.

Associate Director Nell Sedransk advises Kenan Fellow Daniell DiFrancesca on her project.

Postdoc Profile:
Jasmine Zhou

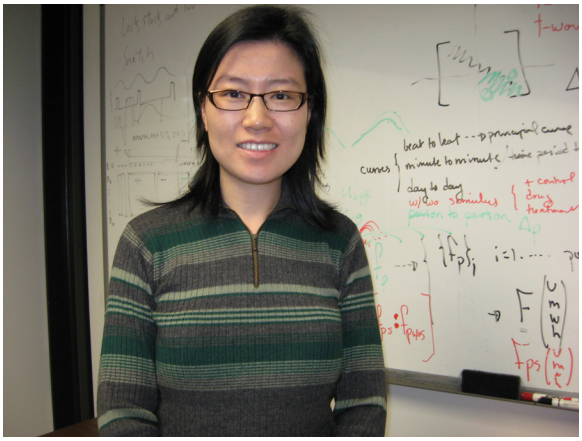
NISS postdoc Jasmine (Yingshun) Zhou has a promising career as a statistician. Born and raised in Shanghai, China, Zhou received her Bachelor of Science degree at Fudan University in Shanghai. She came to the United States to get her Master of Science degree from Bowling Green State University in Bowling Green, Ohio, then moved to Boston to get her Ph.D. in Statistics from Boston University. Jasmine is married to Jie Lu and they have two children, Victor Lu who is two-years-old, and a seven-month-old girl named Sophie.

Jasmine started at NISS in July 2007 and has been very busy working on several projects.

Most of Jasmine's work at NISS has been focused on the QT interval, which is an interval on the ECG used to evaluate cardiac safety in drug development and drug approval. Jasmine has primarily worked on three major projects regarding QT. One project Jasmine has been working on is to model and analyze T wave morphology using functional data analysis. "We built a model that has a reference curve and four parameters to describe the characteristics of each T wave from the reference curve," explained Jasmine. The model accounts for approximately 95 percent of the variation of the T wave and the four parameters are interpretable in terms of biology and physiology.

Jasmine and her team presented the model at the Joint Statistical Meetings (JSM) in Denver, Colorado in August and at the International Symposium of Biopharmaceutical Statistics (ISBS) in Shanghai at the end of June.

She is now involved in another project that uses this four-parameter model to find a better biomarker for cardiac safety. NISS is in the process of getting bio data



Jasmine Zhou is working on several QT projects for NISS.

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Calendar of Events

Exploration Workshop on Financial Risk Modeling and Banking Regulations:
February 5-6, 2009, Washington DC. ARA ELIGIBLE.

2009 Affiliates Annual Meeting
Friday, April 24, 2009 in Storrs, CT. The Department of Statistics at the University of Connecticut is hosting this event. The meeting will be followed on Saturday, April 25, by the 23rd New England Statistics Symposium.

ITSEW 2009: The Concept of Total Survey Error—Uses and Abuses
June 14-17, 2009 in Tällberg, Sweden. ARA ELIGIBLE.

2010 Affiliates Annual Meeting
April 2010 in Chicago, IL. The meeting is hosted by SPSS and other organizations.

Affiliate Profile:
RTI International

RTI International, one of the world's leading nonprofit research institutes, has a rich history in statistical sciences. In fact, one of the first departments established at RTI was the Statistics Research Division, led by Dr. Gertrude Cox in 1959. As RTI grew, so did its statistical research capabilities. The Institute now offers services in many different areas, including survey statistics, small area estimation, non-sampling errors, non-response bias analysis, biostatistics, epidemiology, behavioral and social science statistics, and genomic, proteomic and metabolomic data analysis. RTI International also employs more statisticians than most companies, with about 150 statisticians from its 2,800 employee base.

Pictured L to R: James R. Cromley, Senior Fellow; Sally Morton, Unit VP, Statistics & Epidemiology; and Roy Whitmore, Division VP, Social Sciences Division at RTI International.

Sally Morton, Ph.D., vice president of RTI International's Statistics and Epidemiology Unit, said, "RTI handles all aspects of statistical surveys. We handle the design, help figure out who the target is, how the survey will work, etcetera. Then we have another group of people who go out into the field and actually do the implementation. And, we have another team who does the data analysis." Dr. Morton will be the president of the American Statistical Association (ASA) in 2009.

In 1976, RTI introduced the SUDAAN® software for analyzing cluster-correlated data arising in many applications such as complex sample surveys, randomized experiments and epidemiological studies. Through the years, RTI has continued to enhance the SUDAAN® software.

In 1988, RTI began working on the National Survey on Drug Use and Health, the major source of data on substance abuse for policy makers. RTI conducts several very important surveys for education, including the National Education Longitudinal Study fourth follow-up in 2000, and the National Postsecondary Student Aid Study from 1992 to the present. RTI also manages the Pregnancy Risk Assessment Monitoring System for the Centers for Disease Control. These are just a few examples of important national surveys that RTI conducts for the federal government.

In addition, RTI conducts statistical studies for commercial clients. RTI just completed the survey research for ***U.S. News & World Report's 2008 'Best Hospitals' Rankings***.

Roy Whitmore, Vice President of Statistics & Epidemiology's Social Sciences Division, said that another central area of statistics that RTI is involved with is the data coordinating center activities.

"They are involved with the data collection and management, creating public use files, etc. Sometimes they have more of an analysis component that results in publications, supporting the principal investigators (PIs). For example, RTI may have a health or medical intervention going on where there will be 10 to 100 different medical centers where various interventions are happening but they are all implementing similar protocols. The Data Coordinating Center makes sure they are all using comparable protocols and then receives the data from the centers and gets it into a unified database and then supports the PIs of the various centers in developing their analyses," explained Whitmore.

John Heinrich, Vice President of Statistics & Epidemiology's Health Sciences Division, explained that another central area of statistical research is conducted for epidemiology, chronic and infectious diseases, and genetics and environmental research. While there are many studies covering a myriad of diseases, one of the larger research areas at RTI is HIV/AIDS research. RTI conducts surveys and provides statistical analysis for HIV/AIDS prevention and treatment studies. They also use computer-based economic

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Building Opening

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when it was formed in 1991.

The ceremony took place 11 years to the day from the dedication of the original building. Construction of the addition started in January 2008 and was completed in October. The new wing features a 38-seat, state-of-the-art lecture room and commons room with adjacent rooftop terrace, which are shared by NISS and SAMSI. SAMSI's directorate, staff, postdocs, visitors, faculty fellows and graduate students occupy the 17 offices and two conference rooms in the addition, while NISS regains nine offices on the second floor of the original building.

The 11,782-square-foot addition, which nearly doubles the size of the building, brings to completion a process begun prior to the formation of NISS. Funds for the original building provided by the state of North Carolina were a major factor in the selection of RTP as the location of NISS. Both the award-winning existing building and the addition were designed by O'Brien/Atkins of Research Triangle Park, and the general contractor for both was Clancy & Theys of Raleigh.

Zhou Working on QT Projects

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from pharmaceutical companies to see how this works.

As part of the IMSM workshop this summer, Jasmine and Sedransk gave the students a project to see the effect of the process of measuring the QT. Currently, the protocol is that one has to look at three consecutive representative beats and measure the median. It is not very accurate and creates a potential for selection bias. The students helped NISS get this project started and Jasmine, Sedransk and others will work on finishing the project and write a poster for next spring.

Another project she worked on involved marking the end of the T-wave using a Baysian approach. She combined the slope and curvature information to determine the end of the T-wave.

The third project she is working on is to help pharmaceutical companies with statistical analysis of QT in clinical trials. The NISS group, led by Jessie Xia, another post doc at NISS, worked with Eli Lilly and Company to compare the difference of QT interval measurements given different design elements, such as the number of replicates at each time point.

Former Postdocs

Laura J. Steinberg, professor and chair of the Department of Environmental and Civil Engineering at Southern Methodist University (SMU) in Dallas and an internationally known civil and environmental engineering scholar, has been named the new dean of Syracuse University's L.C. Smith College of Engineering and Computer Science (LCS).

From the NISS LinkedIn Group, we received this message from **Vincent Granville**, Chief Scientist at Click Forensics, Principal at AnalyticBridge:
"I am located in Seattle, working for a company called Click Forensics (Austin), and managing the AnalyticBridge social network. I was a postdoc with the NISS in 1996."

More Photos from th

L to R: John Atkins, President of O'Brien Atkins, James Landwehr, chair of NISS Board of Trustees and Alan Karr, Director of NISS.

Christopher Stark, Program Director of the Division of Mathematical Sciences at the NSF, and Ingram Olkin, Stanford U., enjoy dinner at the open house.

New Website Will Make Information Easier to Find

NISS has contracted with Design Hammer of Durham, NC to redesign its website. The process will take three to six months to complete.

"We wanted to create a site that had our key stakeholders in mind. We envision it to be easy for them to find the information they need. We also want to make our website more interactive and engaging," notes Alan Karr, Director of NISS.

The new website will be broken into categories such as news, events, research, affiliates, news, careers, publications and more. There is also a possibility of the creation of an Intranet, where documents such as the Board of Trustees agendas, reimbursement documents, and an area just for the NISS affiliates. "This internal site will also feature a way for people to make program suggestions," comments Karr.

NISS also has started a group on LinkedIn. Anyone affiliated with NISS is welcome to join the group.

RTI International Holds Long Relationship with NISS

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modeling techniques to carry out cost-benefit and cost-consequence analyses of various HIV therapies.

NISS and RTI have had a long-standing relationship. Dan Horowitz worked with Jerry Sacks and others when NISS was first being organized. RTI even provided space for NISS when it was first incorporated, before it moved to the TUCASI campus. Through the years, many RTI statisticians have attended NISS workshops and participated on panels for NISS and for SAMSI. As a NISS affiliate, RTI sees NISS workshops as a great way for its junior and mid-level staff to get some professional development.

"For those of us in multi-disciplinary applied work, we are very supportive and glad that NISS is there for us," commented Morton, "NISS is trying to connect those of us that are out in the trenches that have real-world applied problems with academics. NISS provides a place to get people together from both sides to look at the challenging problems."

Whitmore and Morton also noted that agencies (like NCES) like to work with NISS, because NISS provides a broader and more impartial view, which can be very beneficial at times.

As RTI looks to its 50th year and beyond, its statistical sciences division will continue to grow and thrive as one of the core groups at the Institute. It will find new ways to conduct surveys, and will assist in critical analysis of key issues of the day.

For more information on RTI's statistical program, go to RTI's website, www.rti.org.

ne NISS Open House

Mary Ellen Bock,Purdue U. and Jim Rosenberger, Penn State, both NISS Board of Trustees members, chat at the open house.

Director of the Division of Mathematical Sciences at the National Science Foundation Peter March (left) and Sastry Pantula, Head of the Statistics Department at NCSU (right) enjoy the evening at the NISS open house.

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NISS/SAMSI Affiliates

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AT&T Labs-Research, Florham Park, NJ
Avaya Labs, Basking Ridge, NJ
Bayer HealthCare Pharmaceuticals, West Haven, CT
Bell Labs - Lucent Technologies, Murray Hill, NJ
GlaxoSmithKline, Research Triangle Park, NC and Collegeville, PA
Merck Research Laboratories, West Point, PA
MetaMetrics, Inc., Durham, NC
RTI International, Research Triangle Park, NC
Sanofi-Aventis Pharmaceuticals, Bridgewater, NJ
SAS Institute, Cary, NC
SPSS, Chicago, IL
Wyeth, Collegeville, PA
Xerox Innovation Group, Webster, NY

Government Agencies & National Laboratories

Bureau of Labor Statistics, Washington, DC
US Census Bureau, Washington, DC
Energy Information Administration, Washington, DC
National Agricultural Statistics Service, Fairfax, VA
National Center for Education Statistics, Washington, DC
National Center for Health Statistics, Hyattsville, MD
National Security Agency, Ft. George W. Meade, MD
Office of the Comptroller of the Currency (Treasury Department), Washington, DC

University

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Carnegie Mellon University, Department of Statistics
Columbia University, Department of Biostatistics
University of Connecticut, Department of Statistics
Duke University, Departments of Statistical Science and Mathematics
Emory University, Department of Biostatistics
University of Florida, Department of Statistics
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