New Era Begins at SAMSI with NEW Director

In January 2018, SAMSI welcomed its third director, David Banks, a Professor of the Practice of Statistics from Duke University’s Department of Statistical Science.

“SAMSI is amazing...I’ve been involved since 2003, and I have watched it grow and evolve,” said Banks upon being announced as the new director. Banks took over the position from Richard Smith, the Mark L. Reed III Distinguished Professor of Statistics and Professor of Biostatistics from the University of North Carolina at Chapel Hill’s Department of Statistics and Operations Research (STOR). Smith has served as SAMSI Director since 2010 and now assumes the role of an Associate Director at SAMSI.

During his tenure, Smith did a great deal to enhance the SAMSI brand by working to bring in interesting programs that highlighted the importance of statistics and applied mathematics across a broad spectrum of subjects. From forensic science to astronomy or computational methods for large data and climate research, Smith worked with the SAMSI directorate and staff to bring in fresh programs organized by some of the leading experts in their fields from around the world. In his new role as an associate director, Smith will focus more of his efforts towards his passion of teaching and climate research.

Banks obtained his Master of Science in Applied Mathematics from the Virginia Polytechnic Institute and State University in 1982, followed by a Ph.D at the same school in Statistics in 1984. In his career, Banks has served in numerous academic institutions and government organizations. One of Banks’ most prestigious positions was as Chief Statistician of the U.S. Department of Transportation in the late 1990’s, followed by a stint at the U.S. Food and Drug Administration in 2002. Banks returned to academics in 2003, where he joined the Department of Statistical Science at Duke.

“Every time you change jobs you get a new skill set, a new set of friends, some new ideas and a raise,” said Banks. “If you change jobs well, you keep the old friends, skills and thinking. Changing jobs is positive, and I hope my move to SAMSI will be as gratifying has my previous job hopping has been.”

In addition to his many professional accomplishments, Banks has also written scholarly papers and has served as an editor of the Journal of the American Statistical Association, as well as co-founding the journal of Statistics and Public Policy, where he also served as an editor. He has also published 74 refereed articles, edited eight books, and co-authored four monographs.

In his research, Banks enjoys statistical modeling the most because the research offers insight into the explanations of complex problems. His research areas also include models for dynamic networks, dynamic text networks, adversarial risk analysis (i.e., Bayesian behavioral game theory), human rights statistics, agent-based models, forensics, and certain topics in high-dimensional data analysis.

Banks recently served as the president of the International Society for Business and Industrial Statistics. He is a fellow of the American Statistical Association and of the Institute of Mathematical Statistics. He also won the American Statistical Association's Founders Award in 2015.
Banks' said that for now, until he gets more comfortable in his new position as director at SAMSI, he will focus research goals towards data science and machine learning methodologies. Everyone at SAMSI welcomes Banks as the new director and looks forward to working with him.

The QMC program has ten working groups that were created in the QMC Opening Workshop in late August 2017. The working groups support research being done by applied mathematicians, statisticians and researchers across a wide variety of topics. The working groups will re-convene at the QMC Transition Workshop in May 2018 to discuss their findings and to develop collaborations between colleagues for future research.

The Trends and Advances Workshop is one of many ways in which SAMSI continues to promote the importance of applied mathematics, statistics and computational science. To see the research presented, visit the workshop webpage at: https://www.samsi.info/qmc-trends-and-advances.

SAMSI Completes Second Workshop in QMC Program

SAMSI hosted the Trends and Advances in Monte Carlo Sampling Algorithms Workshop, part of the Quasi-Monte Carlo and High-Dimensional Sampling Methods for Applied Mathematics (QMC) Program on the campus of Duke University from Dec. 11-15, 2017.

The workshop was attended by more than 100 experts in the fields of applied mathematics, statistics and machine learning for the purpose of exchanging ideas and advancing the broad area of sampling algorithms.

This event was the second workshop presented in the QMC program and featured how Monte Carlo sampling methods can be used to help optimize performance of machines and/or business and industrial processes. This complex methodology is widely used in physics, chemistry, mathematics and statistics, and is most useful when other methods fail due to the high dimensionality of the problem.

Participants enjoyed a week-long workshop that featured talks from innovative mathematicians from around the world. The talks focused on research being done in the field of Monte Carlo sampling and how these applications can be used to tackle real-world problems in business and industry.

The Jet Propulsion Laboratory (JPL) is a federally funded research and development center and NASA field center, located near the California Institute of Technology (Caltech) campus. SAMSI, in conjunction with Caltech, co-sponsored the Remote Sensing, Uncertainty Quantification and Theory of Data Systems Workshop here Feb. 12-14, 2018.

Remote sensing, used by the USGS and other research organizations, is the process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance from a targeted area.

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Caltech (cont.)

Data is captured from sources such as cameras on satellites and planes, sonar systems and many more. The data helps to determine physical changes in the Earth such as temperature variance and ocean levels. This information gives researchers a better understanding of how our Earth is changing and evolving.

This remote sensing information is then entered into spatial statistical algorithms to run estimates on present and future changes. This information in many cases can be quite massive and thus stored in different physical locations. The workshop helped to discuss how to store this important data and how best to share it with multiple entities across multiple platforms accurately and efficiently.

This productive two-day workshop produced much discussion and the participants went away with a better understanding of how to further this research.

This workshop was just one more way that SAMSI supports the advancement of statistics, applied mathematics and computer science in order to innovate the future.

To find out what was discussed at this workshop, visit the webpage: [https://www.samsi.info/remote-sensing-caltech](https://www.samsi.info/remote-sensing-caltech).

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Program on Statistical, Mathematical, and Computational Methods for Precision Medicine (PMED)

For more information on this program, visit the web page at: [https://www.samsi.info/pmed](https://www.samsi.info/pmed)

**Key Dates**

Opening Workshop
August 13-17, 2018

Questions: pmed@samsi.info

Elvan Ceyhan
SAMSI Deputy Director and PMED Directorate Liaison

Program on Model Uncertainty: Mathematical and Statistical (MUMS)

For more information on this program, visit the web page at: [https://www.samsi.info/mums](https://www.samsi.info/mums)

**Key Dates**

Opening Workshop
August 20-24, 2018

MUMS Fall 2018 Course
Tuesdays, August 28 – December 4, 2018

Questions: mums@samsi.info

David Banks
SAMSI Director and MUMS Directorate Liaison

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Want to attend one of our programs, workshops or events? VISIT [www.samsi.info/participate](http://www.samsi.info/participate) For more details on how you can find out what the SAMSI Experience is ALL about!
SAMSI Prepares Postdocs & Grads for Future Careers

Though SAMSI is known for its workshops and special events promoting math and science, you may not know however that they also work diligently to prepare postdoctoral fellows and graduate students with tools for future success.

Since Sept. 2017, SAMSI has hosted multiple Professional Development Workshops (PDWs) geared toward helping young professionals find and get future careers in math and science.

The PDW series is hosted at SAMSI and features a two-hour talk with question and answer session, followed by a lunch.

The series of lectures features SAMSI Directorate members, professionals from business, industry, government and specialists in the field of communications and marketing. All of these short talks help those interested in science and math careers to promote and catalog their research, create CVs and resumes and give them practical tools such as interview preparation. There have been five events in the series thus far.

Huang Huang, a SAMSI 2017-18 Postdoctoral Fellow, appreciated the benefits of the workshop series because it provides him with skills like building a strong CV and/or resume, interview preparation, and time management. Huang thinks the tips he has learned in the workshop series will help lead him to a future career in math and science.

SAMSI PDW’s help grow and shape the next generation of young professionals in the fields of math and science. For people visiting or local to the Triangle who would like to attend future events, view the PDW web page for more information on current or past workshops: https://www.samsi.info/pdw.

Scott Morgan, a communications and marketing expert and owner of the Morgan Group, speaks at a recent SAMSI Professional Development Workshop (PDW). Morgan shared tips and tools with postdocs and graduate students about what they need to know about creating resumes, CVs and interviewing skills for science and math jobs.