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The Newsletter of the Statistical and Applied Mathematical Sciences Institute

Snehalata Huzurbazar Joins SAMSI as Deputy Director

Snehalata Huzurbazar has accepted the position of deputy director of SAMSI, starting July 9. She will be at SAMSI for two years, while taking a leave of absence from the University of Wyoming. Snehalata is replacing Pierre Gremaud, who is finishing his fourth year at SAMSI.

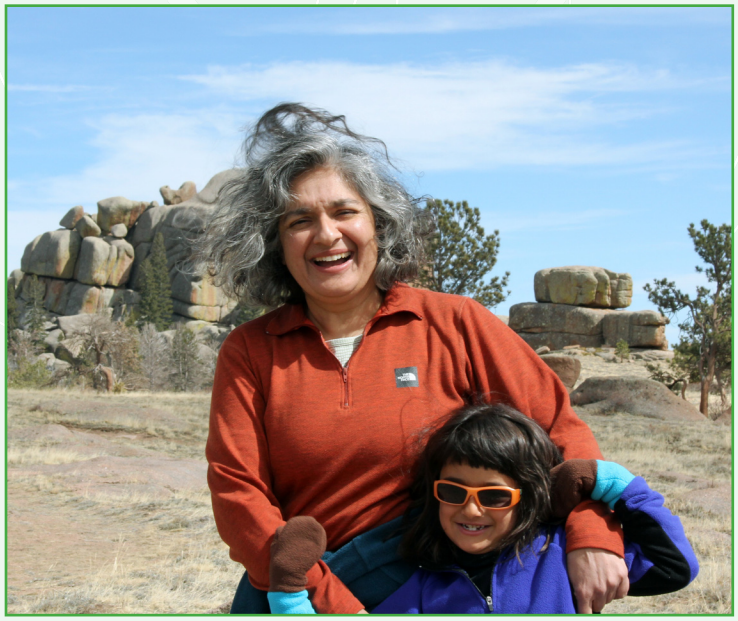
In her new position, Snehalata will help administer the SAMSI programs and will help to develop future programs. She will also be involved with the education and outreach efforts and will work on staff and personnel issues. Huzurbazar will be a part of the directorate, which comprises the director, three part-time associate directors and the deputy director.

Many people may remember Snehalata who was at SAMSI last spring when she was participating in the Analysis of Object-Oriented Data (AOD) program. Her infectious laugh and beautiful smile brightened up the hallways of SAMSI. She was very involved with the Trees and Dynamics working groups from AOD.

Snehalata said she comes from a statistics family. "My father (V. S. Huzurbazar) was a statistician, and Harold Jeffreys' only statistics student, who started the Mathematics and Statistics Department at the University of Poona in India," she noted. He was a Fulbright scholar visiting professor at Iowa State when she was born. Her sister, Aparna Huzurbazar is a statistician at Los Alamos in New Mexico as is her statistician brother-in-law, Brian Williams.

Snehalata spent her childhood years moving to India, then to Canada and later to Denver, Colorado. At first, she avoided statistics and she did the classic liberal arts exploration of different majors varying from the Classics to Political Science to Economics during her undergraduate work at Grinnell College. She also spent a year in Zagreb, Croatia during that time, learning Croatian. Next, she went to Vanderbilt University for her graduate work in Economics and realized that she really liked the Econometrics side of Economics. She then went to Colorado State University to get a Masters degree but ended up doing her Ph.D. in Statistics.

Much of Huzurbazar's current research is working with the statistics issues that arise in the data generation pipelines in evolutionary bioinformatics. "Genomes for various species are sequenced, the sequences are run through all kinds of computer programs in order to obtain the final data that people model. Within each computer program, different criteria can lead to different final 'data.' Our concern has been that we are not accounting for the effects of this on final data analyses and inference," explained Huzurbazar. Her other active collaborations are with colleagues in Glaciology, Sedimentology, Restoration Ecology, Chemical Engineering and Sociology. She spent 2004-05 at the Institute of Arctic and Alpine Research in Boulder, Colorado. A current sedimentology project is modeling what are called particle or grain-size distributions, namely, looking at the distribution of sand particles from really fine-sized grains all the way to up to things that you can see, and investigating whether the distributions change in different types of sediment. On the glaciology side of things, the most difficult and thus the slowest moving of her research projects, is modelling three-dimensional data from boreholes drilled in glaciers in order to learn about processes such as internal deformation.


Snehalata and her daughter, Asha, taking a hike.

Snehalata is really looking forward to making an impact at SAMSI, especially working on developing new programs and contributing to the education and outreach efforts. "Making an impact on outreach is really important to me. We have trouble sometimes getting people into the Mathematical Sciences. I think we need to inform young people about the whole spectrum of career options for mathematical scientists and show them that it can be a productive and fun career," said Huzurbazar.

When Snehalata is not working, she spends time with her seven-year-old daughter, Asha, shuttling from violin to dance to swim classes. Asha, Snehalata and her partner, Tim, like hiking together. Tim and Asha usually like to point out how little she knows about all the birds that they see. Snehalata also likes to cook and maintains her sanity doing Iyengar yoga.

SAMSI National Advisory Committee Co-Chair Profile: Mac Hyman

Mac Hyman, Evelyn and John G. Phillips Distinguished Chair in Mathematics from Tulane University, has been on the SAMSI National Advisory Council since 2010 and is currently co-chairing the committee with Susan Murphy.

He grew up in Lakeland, Florida and went to Tulane University in New Orleans to study mathematics and physics. From Tulane, he went to the Courant Institute of Mathematical Sciences at New York University and received his Ph.D. in Mathematics in 1976. While a graduate student, he spent summers at Los Alamos Laboratory in New Mexico as a summer intern. The internship turned into a 35-year career. He chose a career that combined mathematics, physics, and scientific computing because he found them to be the languages that unraveled the complexity of nature. His goal has been to uncover and understand the underlying relationships of physical and mathematical systems. Once you understand the right relationships, then everything else can be derived from these.

He has always been passionate about writing quality software and deriving effective algorithms for solving mathematical systems. His early research focused on deriving approaches to maintain the mathematical identifies between differential operators (div, grad, and curl) in their discrete difference approximations. In Los Alamos, he initially wrote large-scale computer codes to help guide programs for harnessing nuclear fusion power for domestic use. Later he turned his attention to applying mathematical modeling to help bring the AIDS epidemic under control. Mac's mathematical models were some of the first reliable estimates of how many people were actually infected with HIV and AIDS. It also uncovered why the early epidemic was not growing exponentially, as is typical of newly emerging diseases.

After Hurricane Katrina brought New Orleans to its knees, Mac returned to Tulane University to teach, do research, and whatever else he could to help the university and community to recover. In his spare time, he loves playing at the piano by ear, skiing, dabbling in ceramics, and Afro/Haitian dancing.

SAMSI National Advisory Committee Co-Chair Profile: Susan Murphy

Susan Murphy, HE Robbins Professor of Statistics, Professor of Psychiatry and Research Professor at the Institute for Social Research at the University of Michigan, has been on SAMSI's National Advisory Committee since 2008. She is currently co-chairing the committee with Mac Hyman.

Susan grew up in Southern Louisiana and attended a rural high school, then went to Louisiana State University, where she obtained her B.S. degree in Mathematics. She later received her Ph.D. from University of North Carolina, Chapel Hill and now lives in Ann Arbor, Michigan.

"I chose statistics for several reasons. I really enjoy mathematics and I wanted to work in a field which would allow me to use mathematics to help society. Second I like the fact that in statistics we can work both on fundamental theoretical problems and applied problems; moreover we utilize these extremes to fuel innovation across the sciences. I feel very fortunate to have entered the field of statistics; it is wonderful to work on interesting problems every day!" notes Murphy.

Murphy works on multi-stage decision problems. This work is motivated by questions concerning how best to sequence interventions for individuals with a chronic disorder. Depending on the type of disorder, these interventions might be medications, behavioral therapies, welfare interventions, employment training, etc. Some really interesting statistical problems occur in this area. In particular most of the estimators are non-smooth functionals of the data, complicating the construction of confidence intervals, etc. Furthermore the data is not only multi-stage but also often high dimensional, thus raising new challenges to statistical machine learning methods.

"Another exciting aspect about my work is that most of the modern research in this area has taken place in engineering and computer science so that there are many opportunities to interact with and learn from these scientists," Murphy comments.

When asked what she likes to do outside of work, she said, "I am an avid ice hockey player. My long term goal is to be good enough to play in the USA Hockey League's 70 and older tournament when I reach this age!"

From the director...

I am delighted to be able to announce the appointment of our new Deputy Director, Snehalata Huzurbazar of the University of Wyoming, who will be joining SAMSI for two years beginning in July. You can read a more detailed profile of Snehalata's background elsewhere in this issue.

I got to know Snehalata when she spent Spring 2011 as a SAMSI visitor to our Object Data program. She made a great contribution to the social as well as the research side of SAMSI so we were delighted when she showed an interest in the Deputy Director position. She has many good ideas for our education and outreach activities as well as our future research programs, and I look forward very much to working with her over the next two years.

SAMSI has a number of committees which work largely behind the scenes but whose input is very important to SAMSI – none more so than our National Advisory Committee, whose members cover a wide range of research in statistics and applied mathematics across the country. As a new feature, we will from time to time be profiling some of our NAC members, starting in this issue with the current co-chairs, Susan Murphy and Mac Hyman. Susan is someone I have known for a long time – her combination of theoretical and applied research, not to mention her huge breadth of interests and energy, make her an ideal co-chair for our NAC. I got to know Mac only much more recently, when he joined the NAC, but he has also brought a great new perspective to SAMSI.

Meanwhile, the Uncertainty Quantification (UQ) program has continued with activities that have a wide geographical spread as well as a broad research focus. Following a summer program at Sandia National Lab and one of our fall opening workshops co-hosted with the Lawrence Livermore National Lab, the spring has seen us at a workshop in Asheville, co-hosted with the NC State's CICS institute, and an upcoming workshop at Oak Ridge National Lab. April also saw nearly 500 participants in the first major UQ conference, organized in Raleigh by SIAM and the ASA, and the launch of a new UQ journal with my predecessor as SAMSI director, Jim Berger, as one of the co-editors. This field of research represents a major new area of interaction between statisticians and applied mathematicians and it is great that SAMSI has been able to play a major role in promoting it.

Students enjoy a quick break in the sun during the February 2012 undergraduate workshop held at SAMSI.

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Calendar of Events for SAMSI

For more information about SAMSI programs and workshops, visit SAMSI's website at ***http://www.samsi.info***

Uncertainty Quantification for High-Performance Computing Workshop
May 2-4, 2012
Oak Ridge National Laboratory, Oak Ridge, TN

Education and Outreach
Interdisciplinary Workshop for Undergraduate Students
May 14-18, 2012
Research Triangle Park, NC

Uncertainty Quantification Program Transition Workshop
May 21-23, 2012
Research Triangle Park, NC

Nonlocal Continuum Models for Diffusion, Mechanics & Other Applications Summer Program
June 25-29, 2012
Research Triangle Park, NC

Computational Advertising Summer Program
In Cooperation with SIAM and the SIAG/DMA
August 6-17, 2012
Research Triangle Park, NC

Data Driven Decisions in Healthcare Program Opening Workshop
August 26-29, 2012
Research Triangle Park, NC

Statistical and Computational Methodology for Massive Datasets Program Opening Workshop
September 9-12, 2012
Research Triangle Park, NC

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