

## Schedule of Events

Friday, April 11, 2008

4:00 p.m. — Refreshments in the Cohen Room, room 230, Statistics Building.

4:30 p.m. — Bradley Lecture in room 306, Statistics Building.

6:00 p.m. — Happy Hour, Georgia Center for Continuing Education. Cash bar.

7:00 p.m. — Dinner and after-dinner talk, Georgia Center for Continuing Education. \$20/faculty and \$10/students.

Please RSVP to [jhdavis@uga.edu](mailto:jhdavis@uga.edu) by 04/04/08 with your choice of either Vegetarian Lasagna (with or without egg) or Roast Chicken Forestiere.

Saturday, April 12, 2008

11:00 a.m.- 3:00 p.m. — Spring Picnic at Shelter 1, Memorial Park.

## Biographical Sketch

Jayanta Ghosh has been Director and Jawaharlal Nehru Professor at Indian Statistical Institute and President of The International Statistical Institute. Currently he is a Professor at Purdue University and Professor Emeritus at Indian Statistical Institute. He is the author of more than a hundred papers and several monographs. He has served on editorial boards of Sankhya, JSPI and the Annals of Statistics.

Additional information on Jayanta Ghosh can be found at his webpage:

<http://www.stat.purdue.edu/~ghosh/>

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## The Bradley Lecture

**Motivation and Convergence of Two "New" Fast Algorithms for Estimating the Mixing Distribution in Mixture Models**

and

Objective Bayes — Old and New Questions, Some Answers

**Professor Jayanta Ghosh**

Purdue University  
Indian Statistical Institute

This lecture also serves as the  
Spring 2008  
Joint Statistics Seminar  
with Clemson University

Friday,  
April 11, 2008  
at 4:30 pm



# The Bradley Lecture

The Bradley Lecture is an annual lecture that honors former UGA faculty member Ralph Bradley. Ralph was born on November 28, 1923 in Smith Falls, Ontario, Canada, and grew up in the village of Wellington. After graduating from Queen's University in 1944 with an honors degree in mathematics and physics, he served in the Canadian Army from 1944 to 1945 and completed an M.A. degree at Queen's in 1946. He received his PhD in 1949 at the University of North Carolina Chapel Hill, and went on to a very distinguished career. He was the founder of the Department of Statistics at Florida State University and served as its Head from 1959-1978. He joined UGA in 1982.

Ralph Bradley made many other contributions to Statistics, including as a researcher (in design of experiments, nonparametric statistics, sequential analysis and multivariate analysis) and through an exemplary record of service to the profession (in ASA, IMS, International Biometric Society, ISI), including as President of the ASA in 1981.

The Bradley Lecture series provides an opportunity for UGA graduate students to interact with the speaker, typically an eminent statistician of their choice. After a seminar in the afternoon, the speaker gives an after dinner presentation and often stays for the next day's spring picnic to mingle with faculty and students.

## The Bradley Lecture:

### Motivation and Convergence of Two "New" Fast Algorithms for Estimating the Mixing Distribution in Mixture Models

High dimensional mixture models have become very important in Bioinformatics. One major area of application is to microarray data on expression of thousands of genes.

The most difficult part of inference is the estimation of the mixing distribution, the rest of inference is fairly straightforward. More details appear below.

Given the parameters  $t_i, i=1,2,\dots, n$ , the observed random variables are independent with density  $p(x|t_i)$ . In the gene expression problem the  $t_i$  is the effect of the  $i$ th gene. In the mixture model, the  $t_i$ 's are iid with distribution  $f(t)$ . If we integrate out the  $t_i$ 's, the  $x_i$ 's are iid with density  $p_f(x) = \int p(x|t)f(t)dt$ . The density  $f$  is called either a prior for  $t$  or a mixing density. Our inference problem is to estimate  $f$  non-parametrically given iid  $x_i$ 's with density  $p_f(x)$ .

We discuss properties of a relatively new and very fast algorithm for an estimate by Newton and its average over 11 permutations of data. These estimates are compared with NP MLE and NP Bayes estimate. We also provide motivation through Stochastic Approximation and prove convergence.

## After Dinner Talk:

### Objective Bayes---Old and New Questions, Some Answers

This is an after dinner cocktail of (some anecdotal) History of Statistics, a little (non-technical) Philosophy of Science, and (some hopefully simple) Statistics. I will explain informally what it means to be an Objective Bayesian, now and in the past. Then I will show you some common questions philosophers ask about Objective Bayes and my answers to those questions.

I end with a new question I learned from James Joyce, and a conjecture of mine on what might be an answer to the new question.

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