

THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS
AND
THE STATISTICS CLUB
jointly present



The Bradley Lecture

Friday, April 19, 2024

Brooks Hall 145 | Founders Memorial Garden 4:00 pm

Registration Fee: \$25 for non-members, \$15 for members

Dr. Dipak Dey

Department of Statistics
University of Connecticut

Generalized Variable Selection Algorithms for Gaussian Process Models

With the rapid development of modern technology, massive amounts of data with complex pattern is generated. Gaussian process models that can easily fit the nonlinearity in data become more and more popular nowadays. It is often the case that in some data, only a few features are important or active. However, unlike classical linear models, it is challenging to identify active variables in Gaussian process models. One of the most commonly used methods for variable selection in Gaussian process models is automatic relevance determination, which is known to be open ended. There is no rule of thumb to determine the threshold for dropping features, which makes the variable selection in Gaussian process models ambiguous. In this work, we propose two variable selection algorithms for Gaussian process models, which use the artificial nuisance columns as baseline for identifying the active features. Moreover, the proposed methods work for both regression and classification problems. The algorithms are demonstrated using comprehensive simulation experiments and an application to multi-subject electroencephalography (EEG) data that studies alcoholic levels of experimental subjects.

▪ **About the Speaker** ▪

Dipak Dey is an Indian-American statistician best known for his work on Bayesian methodologies. He is currently the Board of Trustees Distinguished Professor in the Department of Statistics at the University of Connecticut. Dr. Dey has an international reputation as a statistician as well as a data scientist. Since he earned a Ph.D. degree in statistics from Purdue University in 1980, Dr. Dey has made tremendous contributions to the development of modern statistics, especially in Bayesian analysis, decision science and model selection. Dr. Dey has published more than 10 books and edited volumes, and over 325 research articles in peer-refereed national and international journals. In addition, the statistical methodologies that he has developed has found wide applications in a plethora of interdisciplinary and applied fields, such as biometry and bioinformatics, genetics, econometrics, environmental science, and social science. Dr. Dey has supervised 50 Ph.D. students, and presented more than 260 professional talks in colloquia, seminars and conferences all over the world. Dr. Dey is an elected fellow of the American Association for the Advancement of Science, the American Statistical Association, the Institute of Mathematical Statistics, the International Society for Bayesian Analysis and the International Statistical Institute.



▪ *History of the Bradley Lecture* ▪

The University of Georgia Department of Statistics and the Statistics Club are proud to host the 30th Annual Bradley Lecture. The event honors former faculty member Dr. Ralph A. Bradley, who was born on November 28, 1923 in Smith Falls, Ontario, Canada, and who 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 afterwards earned his Masters of Arts degree 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 founder of the Department of Statistics at Florida State University and served as its chair from 1959 to 1978. He joined UGA in 1982.

Dr. Ralph Bradley made many contributions to the field of statistics as a researcher in design of experiments, nonparametric statistics, sequential analysis and multivariate analysis. He also had an exemplary record of service to the profession of statistics as a member of ASA, IMS, ISI, as well as by serving as a president of ASA in 1981.

The Bradley Lecture provides an opportunity for UGA graduate students to interact with the speaker, who is normally an eminent statistician of their choice. After the 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.

We hope you'll join us for what should be an informative and exciting event!

▪ *Schedule of Events* ▪

Friday, April 19, 2024

3:30pm – 4:00pm

Arrival
Brooks Hall 145

4:00pm – 4:05pm

Opening remarks

4:05pm – 5:00pm

Lecture

Dr. Dipak Dey
University of Connecticut

5:00pm – 5:30pm

Break

5:30pm – 7:00pm

Dinner

Founders Memorial Garden

7:05pm – 7:30pm

After Dinner Talk

Dr. Dipak Dey
Brooks Hall 145

Registration Fee: \$25 for non-members, \$15 for members
"Please contact Kez Fitzgerald (kmf85837@uga.edu) with questions regarding payment methods."

▪ *After-Dinner Talk* ▪

Dr. Dipak Dey

Brooks Hall 145 | 7:05 PM

Data Science in Action: An Application to NBA Basketball Analytics

Data Analytics has become a necessary part of sports activities, which has become an integral part, and the National Basketball Association (NBA), is no exception. Learning more information is pre-dominant for professional players, coaches and team managers. In order to have a deep understanding of field goal attempts among different players, we propose a zero inflated Poisson model with clustered regression coefficients to learn the shooting habits of different players over the court and the heterogeneity among them and the mixture of finite mixtures model learn the heterogeneity among different players based on clustered regression coefficients and inflated probabilities. We apply our proposed model for learning players' shooting habits and heterogeneity among different players over the 2017/2018 regular season. This illustrates our model as a way of providing insights from different aspects of basketball analytics.

▪ *Bradley Spring Picnic* ▪



Sandy Creek Park | Shelter #2

Saturday, April 20th, 2024 | 10:00am – 2:00pm

Enjoy a relaxing afternoon full of food, fun and fellowship! Mingle with the guest speaker, faculty members, and graduate students while watching the students show off their outdoor grilling skills.