Biostatistics Seminar

Professor Heping Zhang

Yale University

Decision Trees for Precision Medicine

September 9th, 2015, 12-1pm
@ NOA 250 (An auditorium in School of Nursing)

Heping Zhang, Ph.D., is Susan Dwight Bliss Professor of Biostatistics, Professor of Statistics, and Professor in the Child Study Center at Yale University. He has founded and been directing the *Collaborative Center for Statistics in Science* at Yale. He is also an honorary professor of the University of Hong Kong, a 1000-plan scholar appointed by Chinese Ministry of Organization, and was a Chang-Jiang scholar at Sun Yat-Sen University appointed by Chinese Ministry of Education. He received his Ph.D. in Statistics from Stanford University in 1991. He is a fellow of the American Statistical Association and the Institute of Mathematical Statistics (IMS). He is the founding Editor-in-Chief of *Statistics and Its Interface*. He currently serves on the editorial boards of the Journal of the American Statistical Association (JASA), Genetic Epidemiology, and Fertility and Sterility. He was 2008 Myrto Lefkopoulou Distinguished Lecturer of Harvard School of Public Health, and 2011 IMS Medallion Lecturer, a recipient of 2011 Royan International Research Award in Reproductive Health, and a 2013 recipient of Scientific Program Prize Paper by the American Society for Reproductive Medicine. His research interests include nonparametric methods, longitudinal data, statistical genetics and bioinformatics, clinical trials, statistical modeling of epidemiological data, brain imaging analysis, statistical computation, and statistical methods in behavioral sciences. He authored the book *Recursive Partitioning and Its Applications* published by Springer, and has published over 200 peer-reviewed   articles in high impact statistical, genetic, epidemiological, and psychiatric journals including the Annals of Statistics, Biometrika, JASA, JRSS-B, American Journal of Human Genetics, American Journal of Psychiatry, Science, and the New England Journal of Medicine. He is a **master of "Decision Tree" and Precision Medicine.**

For the abstract and other information, see http://sr2c.case.edu/seminars

Hosted By:
Department of Epidemiology and Biostatistics, and
Center for Statistical Research, Computing, and Collaboration (SR2C)
Case Western Reserve University

Department of Epidemiology and Biostatistics
Biostatistics Seminar

Wednesday, September 9, 2015
12:00pm - 1:00pm -- NOA 250

"Decision Trees for Precision Medicine"

Heping Zhang, Susan Dwight Bliss Professor
Department of Biostatistics
Yale University School of Public Health

Abstract: Double-blind, randomized clinical trials are the preferred approach to demonstrating the effectiveness of one treatment against another. The comparison is, however, made on the average group effects. While patients and clinicians have always struggled to understand why patients respond differently to the same treatment, and while much hope has been held for the nascent field of predictive biomarkers (e.g. genetic markers), there is still much utility in exploring whether it is possible to estimate treatment efficacy based on demographic and baseline variables including biomarkers. To address this issue, we focused on a concept of the relative effectiveness of treatments that is of particular importance in precision medicine. The method can identify groups of patients that are more likely to respond one treatment than the other, in contrast to the tradition approach that searches for a superior treatment in a larger population. We developed an automated algorithm to construct decision trees and performed extensive simulation to evaluate our algorithm. We analyzed data from clinical trials to illustrate the practical potential of our method.