Department of Epidemiology and Biostatistics
Biostatistics Seminar

Wednesday, August 26, 2015
12:00pm - 1:00pm -- WG73

"HydeNet: An R Package for Hybrid Bayesian Decision Networks"

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Abstract:

Bayesian networks are directed acyclic graphs representing joint probability distributions, where each node represents a random variable and each edge represents conditionality. The full joint distribution is therefore factorized as a product of conditional densities, where each node is assumed to be independent of its non-descendants given information on its parent nodes. Since exact, closed-form algorithms are computationally burdensome for inference within hybrid networks that contain a combination of continuous and discrete nodes, particle-based approximation techniques like Markov Chain Monte Carlo are popular. We provide a user-friendly interface to constructing these networks and running inference using the 'rjags' package. Econometric analyses (maximum expected utility under competing policies, value of information) involving decision and utility nodes are also supported.

In this session, I will present some basic properties of Bayesian networks, and provide a tutorial for our HydeNet R package, which is now available in beta version on CRAN. If time permits, I will also discuss planned extensions into other model classes and other software platforms.