

**The DIVISION OF BIOSTATISTICS  
of the  
MEDICAL COLLEGE OF WISCONSIN**

Proudly Presents  
A Special Talk  
By:



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**Log-linear Bayesian Additive Regression Trees**

Bayesian additive regression trees (BART) have been applied to nonparametric mean regression and classification problems in a range of applications. To date BART has been limited to models for Gaussian "data", either observed or latent, and with good reason - the Bayesian backfitting MCMC algorithm for BART is remarkably efficient in conditionally Gaussian models. But while many useful models are naturally cast in terms of latent Gaussian variables, many others are not.

In this talk I extend BART to log-linear models for multinomial logistic regression and count regression models with zero-inflation and over dispersion. To accomplish this I introduce a novel prior distribution over BART's parameters. Like the original BART prior, this new prior is carefully constructed and calibrated to be flexible while avoiding overfitting. With this new prior distribution and some data augmentation I am able to implement an efficient generalized Bayesian backfitting algorithm for MCMC in log-linear BART models. I conclude with several example applications.

**Tuesday, November 29, 2016**  
**3:30 – 4:30 PM**  
**Medical College of Wisconsin**  
**Room M2050 – 2<sup>nd</sup> floor of the MEB**  
*Refreshments 3:00 – 3:30 PM in H2030*