

STATISTICS COLLOQUIUM

MONDAY, NOVEMBER 26, 2012

TALK: 4:00 PM — SCIENCE CENTER RM. 309

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

“Bayesian Visual Analytics”

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ABSTRACT

We develop an interactive visual data exploration framework called Bayesian Visual Analytics (BaVA). BaVA combines methods in Visual Analytics (VA) with Bayesian statistics so that experts may guide model based, quantitative data analyses via their interactions with data visualizations. For example, experts may adjust observations in BaVA-driven displays of data to convey that the statistical model (which created the display) must account for similarities and/or differences in these observations. The novelty is that we consider display adjustments to represent cognitive feedback from experts that is reliable information concerning the underlying analytical approach. Thus, we parameterize the feedback so that we may incorporate it into visualizations and enable user-guided data explorations. This talk will focus on presenting the BaVA paradigm and several methods we use transform cognitive feedback into parametric feedback. Additionally, we provide illuminating examples of BaVA-enhanced data explorations based on both simulated and real datasets.

Further, we will discuss the integration of interactive visualization into core statistics undergraduate and graduate programs, and how such topics complement and motivate formal statistical thinking.