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Original Article

Bayesian visual analytics: BaVA

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Abstract

Leman et al. and Endert et al. develop an interactive data visualization framework called visual to parametric interaction (V2PI). With V2PI, experts may explore data visually (assess multiple data visualizations) based on their judgments and an underlying data analytic method. Specifically, V2PI offers a deterministic procedure to quantify expert judgments and update analytical parameters to create new data visualizations. In this article, we explain V2PI from a probabilistic perspective and develop Bayesian visual analytics (BaVA). We model data probabilistically, develop parallels between quantifying expert judgments and eliciting prior distributions from experts, and justify how we update parameters using Bayesian sequential updating. We apply BaVA using two linear projections methods to assess simulated and real - world datasets.

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