Seminar

A Bayesian Hidden Markov Model for Imperfect Debugging

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Abstract
We present a new model to describe software failures from a debugging process. Our model allows for the imperfect debugging scenario by considering potential introduction of new bugs to the software during the development phase. Since the introduction of bugs is an unobservable process, latent variables are introduced to incorporate this property via a hidden Markov model. We develop a Bayesian analysis of the model and discuss its extensions. We also consider how to infer the unknown number of states of the hidden Markov model. The model and the Bayesian analysis are implemented to actual software failure data.