



## Bayesian Nonparametric Replacement Strategies

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In this talk we present a Bayesian decision theoretic approach for replacement strategies for systems that are subject to wear. In so doing, we consider a semi-parametric model to describe the failure characteristics of the system by specifying a nonparametric form for cumulative intensity function and by taking into account effect of covariates by a parametric form. Use of a gamma process prior for the cumulative intensity function complicates the Bayesian analysis when the updating is based on failure count data. We develop a Bayesian analysis of the model using Markov chain Monte Carlo (MCMC) methods and determine replacement strategies. Adoption of MCMC methods involves a data augmentation algorithm. We show the implementation of our approach using actual data.

**Keywords:** Gamma process, data augmentation, MCMC.