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The Poisson Maximum Entropy Model for Homogeneous Poisson Processes

We suggest a Bayesian model with the maximum entropy prior distribution to predict the number of future events for subjects already under observation. The intensity function used to model these events is the one corresponding to a homogeneous Poisson process with unknown parameter rates. The prior distribution for these unknown rates is obtained by maximizing the entropy subject to the condition that the first two moments equal the empirical ones. We find from a simulation study and from a warranty dataset from the automobile industry that the maximum entropy prior is preferable to the noninformative Jeffreys prior.