

Discriminating between some lifetime distributions in Geometric Counting Processes

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Abstract

Gamma, lognormal and Weibull distributions are most commonly used in modelling asymmetric data coming from the areas of life testing and reliability engineering. In this study, we deal with the problem of selecting one of these distributions for a given data set which is consistent with the GP model according to T -statistic based on the ratio of the maximized likelihood (RML). First, we show that T -statistic performs better than Kolmogorov- Smirnov (KS), mean square error (MSE) and maximum percentage error (MPE) based on extensive simulation study. Then, by using the T -statistic, we determine the distributions of ten real data sets shown to be consistent with the GP model by [20]. After validating the distribution for these data sets, we calculate the estimators of the parameters by using the suitable method given in [19], [11] or [8]. Then, we plot observed and the fitted values of the interarrival and arrival times for comparison.

Key Words: Geometric process, Maximum likelihood estimation, Modified maximum likelihood estimation, Ratio of the maximized likelihood.