World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:11, No:01, 2017

Epistemic Uncertainty Analysis of Queue with Vacations

Authors : Baya Takhedmit, Karim Abbas, Sofiane Ouazine

Abstract : The vacations queues are often employed to model many real situations such as computer systems, communication networks, manufacturing and production systems, transportation systems and so forth. These queueing models are solved at fixed parameters values. However, the parameter values themselves are determined from a finite number of observations and hence have uncertainty associated with them (epistemic uncertainty). In this paper, we consider the M/G/1/N queue with server vacation and exhaustive discipline where we assume that the vacation parameter values have uncertainty. We use the Taylor series expansions approach to estimate the expectation and variance of model output, due to epistemic uncertainties in the model input parameters.

Keywords : epistemic uncertainty, M/G/1/N queue with vacations, non-parametric sensitivity analysis, Taylor series expansion
Conference Title : ICIAM 2017 : International Conference on Industrial and Applied Mathematics
Conference Location : Paris, France
Conference Dates : January 23-24, 2017