

Prof Min Xie

Prof Min Xie is presently a Chair Professor of Industrial Engineering at City University of Hong Kong. Prior to that, he served at National University of Singapore for 20 years. He did his undergraduate study at Royal Inst of Technology in Sweden and graduated with a MSc in 1984. He later received his PhD from Linkoping University in 1987. He was an invited professor to INPG, France, in 2000 and a William Mong Visiting Fellow to Univ of Hong Kong in 1996. He is an editor, associate editor and on the editorial board of 20 established international journals. He also served as main chair at a number of international conferences. Prof Xie has supervised more than 30 PhD students and his students hold regular position in banking, industry and academia in different continents. Prof Xie is elected fellow of IEEE, and an elected member of Int Statistical Inst. Prof Xie has published extensively in reliability, quality control, operational research and industrial statistics, and has over 200 journal papers and 8 monographs. His books include “Software Reliability Modelling” by World Scientific, “Weibull Models” by John Wiley, “Advanced QFD Applications” by ASQ Quality Press, “Stochastic Aging and Dependence for Reliability” by Springer.

Talk 3: On Solving Renewal-type Equations

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Abstract:

In optimum replacement studies, warranty cost analysis, and maintenance policies, inventory control, etc. we frequently face the problem of solving renewal equations which is a type of convolution integral equation. Close form solutions exist only in some special cases.

Although bounds or approximations could be used, numerical procedures are very useful, but the standard approaches have some convergence problems due to possible singularity.

In this talk, an early study on a method based on direct integration of the Riemann-Stieltjes integral will first be presented. A simple and iterative algorithm could provide surprisingly accurate results. Some recent studies that have been based on this method, such as error analysis, convergence properties, bounds and approximations, etc. will also be discussed.

The approach is simple and could be useful in solving renewal-type equations in general.