Inspection scheduling for multi-component systems with hidden failures

Mr. Liu Bin
Department of Systems Engineering and Engineering Management
City University of Hong Kong

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Abstract

This paper aims to develop a maintenance policy for a multi-component system subject to hidden failures. It is assumed that each component of the system suffers from hidden failure, which can only be detected at inspection. The objective of the maintenance policy is to determine the inspection intervals of each component such that the long-run cost rate is minimized. Due to the dependence among components, an exact optimal solution is difficult to obtain. Concerned with the intractability of this problem, we adopt a heuristic method named “base interval approach” to reduce the computational complexity. We also analyze the performance of the base interval policy and shows that the proposed policy can approximate the optimal policy within a small factor. A numerical example is presented to illustrate the effectiveness of the policy.

About the Speaker

Liu Bin received his B.S. degree in 2013 from Zhejiang University. He is currently a Phd candidate at the Department of Systems Engineering & Engineering Management, City University of Hong Kong. His research interests include reliability analysis, warranty modeling and maintenance optimization.
Enquiry: 3442 8408

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