Repeat Inspection Planning Using Dynamic Programming

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Summary

In this paper we propose a dynamic programming approach to the problem of determination of the inspection sequence of multi-characteristic critical components, and the number of repeat inspection for each characteristic. The model presented here considers the case of several classification of a product by an inspector. An inspector could classify a product as non-defective, to be reworked, or to be scrapped, with respect to a certain characteristic. The model accounts as well for possible misclassification by the inspector. The dynamic programming algorithm searches for a solution that minimizes the total cost of inspection per accepted component. The total cost includes the cost of false rejection of good items, the cost due to false acceptance of an item which is either reworkable or to be scrapped, the cost of inspection, and the cost of rework.

References:
1. ALNAJJAR HJ, 1993, THESIS FAHD PETROLEU
2. BALAS E, 1996, P 5 IPCO C, P316
3. BALAS E, 2001, INFORMS J COMPUT, V13, P56
4. BELLMAN R, 1957, DYNAMIC PROGRAMMING
5. CHANDRA J, 1998, IIE T, V20, P83
6. CHEN SX, 1997, IIE TRANS, V29, P1039
7. DREYFUS SE, 1977, ART THEORY DYNAMIC P
8. DUFFUAA SO, 1989, APPL MATH MODEL, V13, P408
9. DUFFUAA SO, 1990, J OPTIMIZ THEORY APP, V67, P79
10. DUFFUAA SO, 1994, INT J PROD RES, V32, P1897
11. DUFFUAA SO, 1995, J OPER RES SOC, V46, P930
12. DUFFUAA SO, 1996, INT J PROD RES, V34, P2035
14. 10.1057/palgrave.jors.2601392

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http://www.kfupm.edu.sa
15. ERGUN O, 2003, 446303 MITS SOC SCI
17. LEE HL, 1988, IIE TRANS, V20, P392
19. NEY H, 2000, P IEEE, V88, P1224

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