Group Replacement Model Using Hidden Markov Model

Srinivas Basamgari
JDA Software India Ltd.,
Hyderabad, India
srinivasbasamgari@gmail.com

Dr.S. Gajanana
Mechanical Engineering Department,
M.V.S.R. Engineering College,
Hyderabad, India

Dr. K. Hemachandra Reddy
MED, JNTUA,
Andhra Pradesh, India

***Abstract*- Group replacement model is applicable to the items that fail completely on usage and the result is group replacement age for the entire group of items in the system irrespective of whether they are functioning or not. Generally Industrial items /equipment get worn with time and usage and it functions with decreasing efficiency. The increasing repair and maintenance cost demands the replacement of items. In the current model an intermediate state called repairable breakdown state in between functioning and irreparable breakdown state is considered and the Hidden Markov Model (HMM) is made use of in generating the probabilities of items falling in different states. Replacement decision is made considering money value. The optimal replacement age is the time bucket 't' at which the average cost of the individual replacement, repair and the cost of the group of items is minimum**.

***Index Terms* - GroupReplacement, HMM**

IJSMS