Abstract

The nature and complexity of software have changed significantly in the last few decades. With the easy availability of computing power, deeper and broader applications are made. It has been extremely necessary to produce good quality software with high precession of reliability right in the first place. Olden day’s software errors and bugs were fixed at a later stage in the
software development. Today to produce high quality reliable software and to keep a specific
time schedule is a big challenge. To cope up the challenge many concepts, methodology and
practices of software engineering have been evolved for developing reliable software. Better
methods of controlling the process of software production are underway. One of such methods
to assess the software reliability is using control charts. In this paper we proposed an NHPP
based control mechanism by using order statistics with cumulative quantity between
observations of failure data using mean value function of exponential distribution.

**Reference**

- Musa, J.D, Software Reliability Engineering McGraw-Hill, 1998
- Musa, J.D., Iannino, A., Okumoto, k., 1987. “Software Reliability: Measurement Prediction
  Application”. McGraw-Hill, New York.
- Pham. H., 2003. “Handbook of Reliability Engineering”, Springer
- Balakrishnan.N., Clifford Cohen; Order Statistics and Inference; Academic Press
  inc.,1991.
- K.Ramchand H Rao, Dr. R.Satya Prasad, Dr. R.R.L.Kantham, Assessing Software
  Reliability Using SPC : An Order Statistics Approach, International Journal of Computer
  Science, Engineering and Applications (IJCEA) Vol.1, No.4, August 2011
- MacGregor, J.F., Kourt, T., 1995. “Statistical process control of multivariate processes”.
  Control Engineering Practice Volume 3, Issue 3, March 1995, Pages 403-414
- The Organizational Process Management Cycle Programmed Workbook, Interaction
  Research Institute, Inc., Fairfax, Virginia.
- Carleton, A.D. and Florac, A.W. 1999. Statistically controlling the Software process. The
  99 SEI Software Engineering Symposimn, Software Engineering Institute, Carnegie Mellon
  University
- Smith, Gary, Statistical Reasoning, Allyn and Bacon, Boston, MA, 1991.
- Caprio, William H., "The Tools for Quality," Total Quality Management Conference, Ft.
  Belvoir, Virginia, July 13-15, 1992.
- Juran, J. M. (ed.), Juran's Quality Control Handbook, 4th ed., McGraw-Hill, Inc., New
  York, 1988.
- Hong Pharm; System Reliability; Springer;2005;Page No.281

**Index Terms**

Computer Science  
SOFTWARE ENGINEERING

**Key words**

- Ordered Statistics
- Statistical Process Control (SPC)
- Control Limits
software reliability

software quality