

A Nonparametric Control Chart Based On The Mann Whitney

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A Nonparametric Control Chart Based

Nonparametric control chart are presented for the problem of detecting changes in the process median (or mean), or changes in the process variability when samples are taken at regular time...

(PDF) Control Charts, Nonparametric - ResearchGate

Abstract. Nonparametric or distribution-free charts can be useful in statistical process control problems when there is limited or lack of knowledge about the underlying process distribution. In this paper, a phase II Shewhart-type chart is considered for location, based on reference data from phase I analysis and the well-known Mann-Whitney statistic.

Chakraborti, van de Wiel: A nonparametric control chart ...

Recently, Qiu22 proposed a nonparametric multivariate control chart based on log-linear modeling. He proposed to estimate the in-control distribution of the original training data $X(i)$ by transforming $X(i)$ into binary forms $Y(i)$ to enable a log-linear modeling approach for estimating the joint distribution of $Y(i)$. Even though information is lost in the transformation, Qiu's method

Nonparametric Multivariate Control Charts Based on A ...

For this study, we establish three non-parametric control charts based on RSS viz. the Wilcoxon rank sum charts (W-Chart), the Mann-Whitney chart (U-Chart) and the Hodges-Lehmann estimator chart (HL-Chart). The data are generated from normal distribution and uniform distribution and 11 shapes of Weibull distributions with the process shift

Three Non-parametric Control Charts Based on Ranked Set ...

A non parametric CUSUM control chart based on the Mann-Whitney statistic. ABSTRACT We consider a novel univariate non parametric cumulative sum (CUSUM) control chart for detecting the small shifts in the mean of a process, where the nominal value of the mean is unknown but some historical data are available. This chart is established based on the Mann-Whitney statistic as well as the change-point model, where any assumption for the underlying distribution of the process is not required.

[PDF] A non parametric CUSUM control chart based on the ...

A New Multivariate Non-Parametric Control Chart Based on Sign Test. AbstractMultivariate statistical process control deserves particular attention in the recent scenario. Though, Hotelling T2 control chart is quite popular and widely used technique in this field but its performance is deteriorated when the underlying distribution of the quality characteristics is not following multivariate normal distribution.

A New Multivariate Non-Parametric Control Chart Based on ...

EWMA control chart based on the Sukhatme statistic is denoted by EWMA-S. 3.2 CUSUM CONTROL CHART Similar to [7], the one-sided CUSUM control chart based on non-parametric statistic T is defined as: $S_{t+1} = \max\{S_t - k, 0\}$, where $S_0 = 0$, $h > 0$ and $k > 0$. Parameter k is a reference value and k is a control limit. Hence, W_t is observation based on

Sensitive Non-Parametric Control Charts For Monitoring ...

In addition, the proposed control chart based on ranks of data is a nonparametric method without assuming normal or Poisson distribution for the data. To investigate the performance of the proposed...

Multivariate nonparametric chart for influenza epidemic ...

Nonparametric control chart are presented for the problem of detecting changes in the process median (or mean), or changes in the process variability when samples are taken at regular time intervals. The proposed procedures are based on sign-test statistics computed for each sample, and are used in Shewhart and cumulative sum control charts.

Nonparametric quality control charts based on the sign ...

In this paper, a new nonparametric EWMA Sign Control Chart is proposed for monitoring and detecting possible deviation from the process target. The sampling properties of the new monitoring statistics are examined and the average run lengths of the proposed chart are derived for evaluating its performance.

A new nonparametric EWMA Sign Control Chart - ScienceDirect

Multivariate control charts have a wide range of applications in the field of quality management. This paper proposes a new multivariate non-parametric control chart based on run test. First, the shortest Hamiltonian path of the observations is determined by means of Kruskal algorithm.

A multivariate non-parametric control chart based on run ...

Based on the bootstrap methodology, we design a nonparametric Shewhart control chart in the space of fuzzy random variables equipped with some L2 metric, in which a novel approach for generating ...

(PDF) A Fuzzy Nonparametric Shewhart Chart Based on the ...

In addition to being nonparametric, that is with a known and stable in-control performance for all continuous distributions, a simulation study indicates that the proposed charts can have better out-of-control

performance than the Shewhart X-bar chart and the basic signed-rank chart for the normal distribution and for some heavy-tailed distributions such as the double exponential and the Cauchy.

A Nonparametric Shewhart-Type Signed-Rank Control Chart ...

Amin, et. al., (1995) present nonparametric control charts for process median (or the mean) based on sign test statistic. Altukife, (2003) considered two more control charts based on the "grand median" and "sum of ranks".

A Non-parametric Control Chart for Controlling Variability ...

Most existing nonparametric control charts utilize charting statistics that are based on ranking/ordering information of the observations across different time points. The charting statistics could be of Shewhart, cumulative sum, or exponentially weighted moving averages (EWMA) type.

A Nonparametric Phase I Control Chart for Individual ...

Multivariate Nonparametric Control Chart With Storage Space. Abstract: Currently, it is important to monitor multivariate data in a timely manner. The spatial-rank-based multivariate exponentially weighted moving average control chart (SREWMA) has better relative performance for multivariate data monitoring when the underlying distribution is non-normal.

Multivariate Nonparametric Control Chart With Storage ...

Nonparametric or distribution-free charts can be useful in statistical process control when there is limited knowledge about the underlying process. In this paper a Shewhart-type chart is considered for the location, based on the Mann-Whitney statistic. The control limit calculations use Lugannani-R..."

Nonparametric Quality Control Charts Based on the Sign ...

(Redirected from Distribution-free Control Chart) Distribution-free (nonparametric) control charts are one of the most important tools of statistical process monitoring and control. Implementation techniques of distribution-free control charts do not require any knowledge about the underlying process distribution or its parameters.

Distribution-free control chart - Wikipedia

Another type of nonparametric control charts takes an alter- native approach by first categorizing the original observations and then using tools of categorical data analysis for constructing control charts (cf., Qiu 2008, Qiu and Li 2011b). Assume that the process observations at the current time point are X . $n = (X$.

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