

عنوان مقاله:

A Bayesian Approach for Recognition of Control Chart Patterns

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خلاصه مقاله:

Control chart pattern (CCP) recognition techniques are widely used to identify the potential process problems. Recently, artificial neural network (ANN)-based techniques are popular for this problem. However, finding the suitable architecture of an ANN-based CCP recognizer and its training process are time consuming and the obtained results are not interpretable. To facilitate the research gap, this paper presents a simple statistical approach for detecting and identifying control chart patterns. In this method, by taking new observations on the quality characteristic under consideration, the Maximum Likelihood Estimator of pattern parameters is first obtained and then the Beliefs on each pattern is determined. Then using Bayes' rule, Beliefs are updated recursively. Finally, when the amount of a derived statistic falls outside the calculated control interval a pattern recognition signal is issued. The advantage of this approach comparing with other existing CCP recognition methods is that it has no need for training. Simulation results show high accuracy and satisfactory speed of the proposed method.

کلمات کلیدی:

Control Chart, Pattern Recognition, Bayes' Rule, Maximum Likelihood Estimation

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