عنوان مقاله:

Control Chart Patterns Recognition Using Fuzzy Rules and Improved Bees Algorithm

محل انتشار:

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خلاصه مقاله:

Control charts primarily in the form of X chart are widely used to identify the situations when control actions will be needed for manufacturing systems. Various types of patterns are observed in control charts. Identification of these control chart patterns (CCPs) can provide clues to potential qualityproblems in the manufacturing process. This paper introduces a novel hybrid intelligent system that includes three main modules: a feature extraction module, a classifier module, andan optimization module. In the feature extraction module, a proper set combining the shape features and statistical features isproposed as the efficient characteristic of the patterns. In the classifier module, adaptive neuro-fuzzy inference system(ANFIS)-based classifier is proposed. For the optimization module, improved bees algorithm (IBA) is proposed to improve the generalization performance of the recognizer. In this module, it the ANFIS classifier design is optimized by searching for the best value of the parameter and looking for the best subset offeatures that feed the classifier. Simulation results show that the proposed algorithm has very high recognition accuracy. Thishigh efficiency is achieved with only little features, which have been selected using IBA.

کلمات کلیدی:

ANFIS; Control chart patterns; IBA; Shape feature;Statistical feature

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