Call for Papers

Journal of Quality Technology

1. Special Issue on "Statistical Process Control for Big Data Streams"

NOWADAYS, modern and rapid advancements in sensor technology, as well as emerging sectors producing network and interactive inquiries, such as social media (Facebook, Twitter, Google, mobile devices, etc.), web retail companies (eBay, Amazon, etc.), security services, and health and financial sectors constantly generate huge amounts of complex, high-dimensional and high-frequency data. A lot of information coming from structured and unstructured data streams (web pages, emails, text documents, images, videos, sensor data, etc.) needs to be aligned, integrated, analyzed, and monitored to give companies and organizations new insights about their products, customers, and services.

As the volume and multiplicity of sources, type, and formats of data increase, most traditional statistical tools for extracting meaningful information and detecting undesired patterns become ineffective. Thus, big data streams introduce new and unique challenges for statistical data analysis and modeling. In particular, in the context of statistical process control (SPC)/statistical process monitoring (SPM), new techniques for quickly detecting and diagnosing abnormal activities in sequences of massive amounts of complex data become increasingly crucial and important.

This special issue will publish original high-quality papers that deal with all aspects of the statistical process control for big data streams, including but not limited to the following:

— On-line surveillance of high-dimensional and high-frequency big data streams.

— Off-line change detection and abnormality identification in very large data sets.

— Scalable SPC methods using machine-learning techniques.

— Statistical procedures and fusion algorithms for monitoring heterogeneous, structured, or unstructured big data (including images, text documents, network and relational data, etc).

— SPC methods based on large-scalesimultaneous hypothesistesting.

— Statistical techniques for monitoring and improving the quality of big data.

Paper Submission

All papers must be prepared in accordance with the *Journal of Quality Technology* standards and guidelines and will be reviewed following the regular review process of the journal. Submission of a manuscript implies that the work has not been published before and is not currently under consideration for publication elsewhere.

Authors are required to prepare a cover letter indicating the submission is for the special issue and to submit the paper in PDF or MS Word via email to: Valerie Funk, Manuscript Coordinator, ASQ (email: manuscripts@asq.org).

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Important Dates

- August 31, 2016: Paper submission deadline
- July 31, 2017: Final decision on paper acceptance
- Late 2017 or early 2018: Publication of the special issue

2. Special Issue on "Reliability and Maintenance Modeling with Big Data"

Modern technological developments, such as smart chips, sensors, and wireless communications,

have changed many data-collection processes. In the area of reliability, more and more products are equipped with automatic data-collection systems that track how and under which environments the products are being used. Examples of such products and systems include aircraft engines, locomotive engines, wind turbines, high-voltage power transformers, computed axial tomography (CAT) scanners, and consumer products, such as automobiles, high-end copying machines, and smart phones. The arrival of big data in the reliability area provides opportunities for monitoring, predicting, and improving reliability and lowering operation costs. However, valuable opportunities are also accompanied by big challenges. Such challenges arise not only from the volume of the data but also from the complexity of the data structures. To overcome those challenges, new methods and tools that effectively utilize the big data are much needed in the area of reliability.

This special issue aims to publish original high-quality papers focusing on exciting and novel applications of big data in reliability. The topics of interest include, but are not limited to

— Warranty return predictions.

— Field failure predictions.

— Smart maintenance.

— Reliability monitoring.

— Inference for reliability models with big data.

Paper Submission

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Important Dates

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- July 31, 2017: Final decision on paper acceptance

- Late 2017 or early 2018: Publication of the special issue

3. Special Issue on "Quality Engineering in Advanced Manufacturing"

Emergence of advanced manufacturing technologies along with significant progress in computing and communication has fundamentally transformed manufacturing to a smart operation scheme that facilitates better management and control of quality and productivity under a broadly connected and accessible environment. Future manufacturing has increasingly been characterized as complex, networked cyber-physical systems.

At the product level, complex shapes can now be efficiently manufactured and product customization allows for short-run or even one-of-a-kind manufacturing. At the process level, smart sensing allows for high-frequency, multi-stream data collection, mixing signal data to (usually contactless) in-line inspection. At the design level, large-scale computer experiments can be used to simulate performances of complex products and processes.

With this dramatic transformation of manufacturing environment, quality engineering, which has a strong connection with traditional mass-production schemes, faces fundamental challenges. On the other hand, the "data-rich", dynamic, smart manufacturing environment also offers tremendous opportunities to develop new-generation methodologies and techniques to manage and improve quality.

In an attempt to disseminate cutting-edge developments in quality engineering resulting from the paradigm shift in manufacturing, the Journal of Quality Technology seeks submissions for a special issue on "Quality engineering/techniques for advanced manufacturing" on the following topics:

— Smart sensing scheme for efficient data collection.

— Noncontact data modeling, monitoring, and control.

— Pervasive monitoring and control.

— Data analytics for information capture, representation, extraction, and utilization.

— High-fidelity real-time and predictive modeling and simulation of advanced manufacturing processes (e.g., computer experiments design, modeling, calibration, and optimization).

— Robust mathematical models to simulate advanced manufacturing processes and enable complex control algorithms.

— Design of experiments and statistical quality monitoring for low-volume and large product varieties.

— Uncertainty quantification of manufacturing processes using computer experiments.

— Designing efficient experiments to augment information from high-resolution and low-resolution models.

— Complex shapes modeling, monitoring, inspection, and optimization.

— Data fusion for quality engineering.

Paper Submission

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