Some Nonparametric Control Charts for Monitoring Process Mean or Shape Parameters

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Date: 8 August 2013 (Thursday)
Time: 2:00pm-3:00pm (Tea/Coffee service at 3:00pm)
Venue: B6619 (SEEM Conference Room), AC1

Abstract
In this talk, a brief introduction to some nonparametric statistical process control (SPC) charts for monitoring the mean will first be presented. Then a new multivariate nonparametric control chart for monitoring the shape parameters will be discussed. It is based on integrating a powerful multivariate spatial-sign test and exponentially weighted moving average (EWMA) control scheme for on-line sequential monitoring. This proposed control chart possesses some other important features: its computational speed is fast compared with parametric multivariate EWMA scheme; it is easy to implement because only the multivariate median and the associated transformation matrix need to be estimated from the historical data before monitoring; it is efficient in detecting small or moderate process shifts. When the process distribution is heavy-tailed or skewed, it is also able to handle the case when the sample size is one and effective in detecting downward shifts. Simulation comparisons and a real data example show that it performs quite well in applications.
About the Speaker

Dr. Zhonghua Li graduated with BS degree from Nankai University, China, and received his PhD in 2011 from the same university. Currently, he is an assistant professor in School of Mathematical Sciences, Nankai University. He has held visiting positions at University of Minnesota and National University of Singapore. His research interests include statistical process control, change point detection, reliability engineering. He has published more than 15 papers in refereed journals, such as Journal of Quality Technology, Technometrics, Computers Industrial Engineering, International Journal Production Research, Computational Statistics and Data Analysis, Statistics and Probability Letters, Quality and Reliability Engineering International, etc.

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All are Welcome!

SEEM Seminar 2013-2014/005