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A Multivariate Non Parametric Monitoring Procedure Based on Convex Hulls

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Bersimis et al. (2007) motivated by Woodall and Montgomery (1999) statement published an extensive review paper of the field of MSPM. According to Bersimis et al. (2007) open problems in the field of MSPM, among others are robust design of monitoring procedures and non-parametric control charts. In this work, we introduce a non-parametric control scheme based on convex hulls. The proposed non-parametric control chart is using bootstrap for estimating the kernel of the multivariate distribution and then appropriate statistics based on convex hull are monitored. The performance of the proposed control chart is very promising.

References:

- Bersimis, S., Psarakis, S. and Panaretos, J. (2007). "Multivariate statistical process control charts: an overview". *Quality and Reliability Engineering International*, 23, 517-543.
- Woodall, W. H. and Montgomery, D. C. (1999). "Research Issues and Ideas in Statistical Process Control". *Journal of Quality Technology*, 31, 376-386.

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Special/invited session

Special session on Statistics for change point detection

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