Change point estimation in polynomial profiles with a drift change in the process mean

Majid Aminnayeri 1, Babak Mohammadi 2, Mona Ayoubi 3

Majid Aminnayeri, Associate Prof. Department of Industrial Engineering, Amirkabir University; mjnayeri@aut.ac.ir
Babak Mohammadi, M.S.C Student, Department of Industrial Engineering, Amirkabir University; Mohammadi88@aut.ac.ir
Mona Ayoubi, P.H.D Student, Department of Industrial Engineering, Tarbiat Modares; Mona.ayoubi@modares.ac.ir

ABSTRACT

In this paper, drift change point estimation is considered in the mean of polynomial profiles. For this purpose, change point estimator is calculated using the maximum likelihood approach. Performance of the proposed estimator is evaluated by Monte Carlo simulation after getting an out of control signal from $T^2$ Hotelling control chart. Simulation results show that performance of the proposed estimator in accuracy and precision improves as the magnitude of shifts increases. In addition, desired performance of the estimator is clear in the results.

KEYWORDS

Change point estimation, Drift change, Maximum likelihood, Polynomial profiles, Statistical process control.