Supplementary Materials to "Real-time High-Dimensional Monitoring and Diagnostics via Spatio-Temporal Smooth Sparse Decomposition"

Hao Yan, Kamran Paynabar, Jianjun Shi

May 4, 2017

Appendix: Simulation study for static functional mean   We simulated the static functional mean as the simulated heat transfer map at time $t = 200$ (shown in Figure 2 (c) in the paper). We added the clustered anomalies (shown in Figure 2 (d) in the original paper) after time $t = 200$. The ARLs of different algorithms over 5000 simulation replications for different change magnitude $\delta = 0, 0.5, \cdots, 2.5$ are given in Figure **??**. As we can see that the proposed method (RK) still performs the best due to its ability to accurately estimate the smooth functional mean and sparse clustered background.
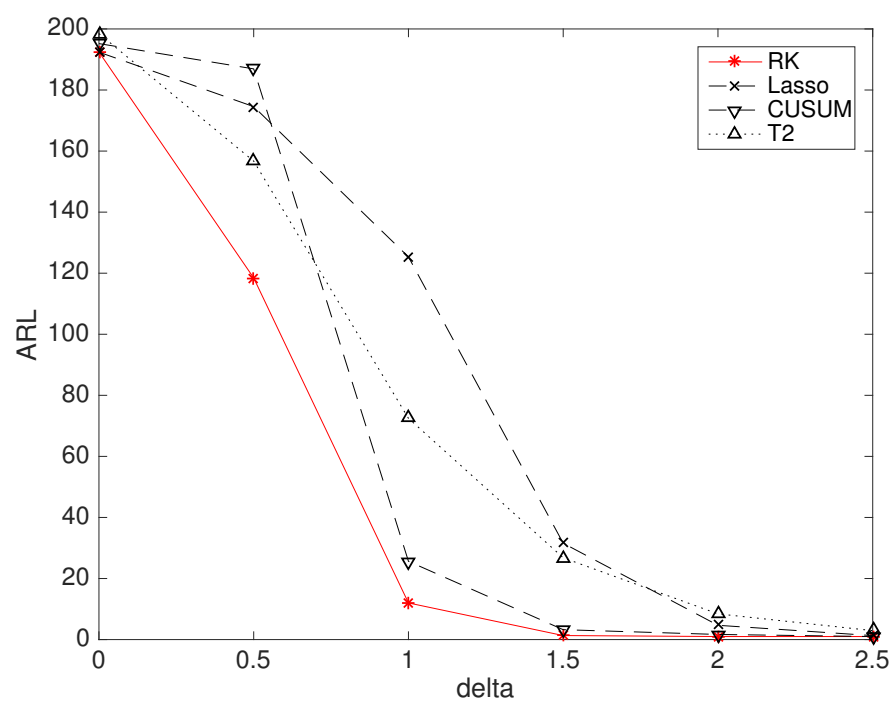
Figure 1: ARL in the static background