

In this article, we investigate the problem of distributed monitoring large-scale data streams where an undesired event may occur at some unknown time and affect only a few unknown data streams. Motivated by parallel and distributed computing and networks, we propose to develop scalable global monitoring schemes by parallel running local detection procedures and by combining these local procedures together to make a global decision via SUM-shrinkage techniques. Our approach is illustrated in two concrete examples in censoring sensor networks: one is the nonhomogeneous case when the possible local post-change distributions are completely specified, and the other is the case of monitoring normally distributed data streams when the unknown local post-change mean shifts can be positive or negative. Numerical simulation studies demonstrate the usefulness of the proposed schemes.