Divergence based inference for Hawkes processes

Anand N. Vidyashankar

George Mason University, Fairfax, VA 22030

Hawkes processes and extensions have been intensely investigated due to their applicability to several scientific fields. The kernel functions of these processes play a central role in describing the probabilistic and statistical properties of the estimators of various functionals of the process. Assuming a parametric kernel function, in this presentation, we describe divergence-based inferential methods for the parameters of the process. We establish the consistency and asymptotic normality of the proposed minimum divergence estimators under certain regularity conditions. Using these results, we describe the efficiency and robustness properties of the proposed estimators under potential model misspecification. We illustrate our results using data examples and numerical experiments. Extensions to multivariate processes will also be indicated.