Prequel to Hawkes Processes: An Overview of Temporal and Spatio-Temporal Point Processes and Some Simulations

Frances Lin

June 2021

Algorithm 1: Simulations of HPP

Input λ, t_{max}

1. Initialize t, t_{vector}

2. **while** $(t \leq t_{max})$

3.   Generate $u \sim U(0,1)$

4.   Set $t_{current} = t + w$ where $w \sim exp(\lambda^* = \lambda)$

5.   **if** $(t_{current} \leq t_{max})$

6. | Add $t_{vector} = c(t_{vector}, t_{current})$

7.   **else**

8. | **return** $\{t_k\}_{k=0,1,...}$

Algorithm 2: Simulations of NPP via Thinning Algorithm

1.

2.