Lin_Algorithms

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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 Hawkes Process via Thinning Algorithm

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Imput μ, α, β

1. Simulate a HPP using Algorithm 1
2. Create a $\lambda(t)$ function where the function $= \mu + \sum_{i:T_i<t} g(t - t_i)$
3. Set λ^* = apply the $\lambda(t)$ function to the HPP
4. Generate $u \sim U(0,1)$
5. **if** $(u < min(\frac{\lambda^*}{\lambda}, 1))$
6. | Keep
7. **else**
8. | **return** $\{t_k\}_{k=0,1,...}$
