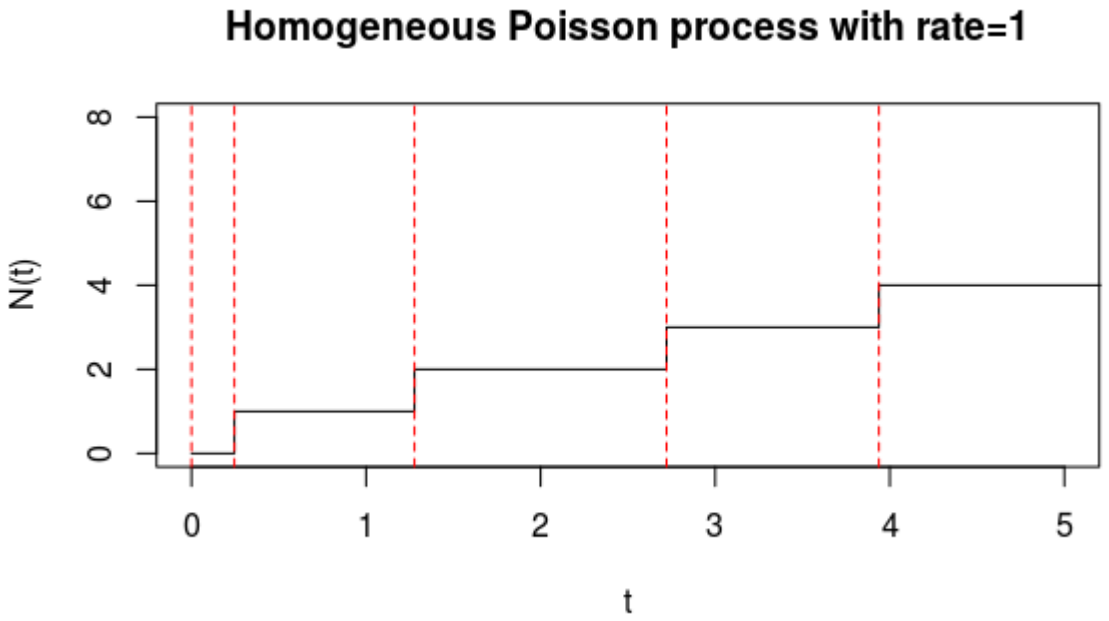
Simulation of Hawkes Process

Suhas Shastry

Poisson Process

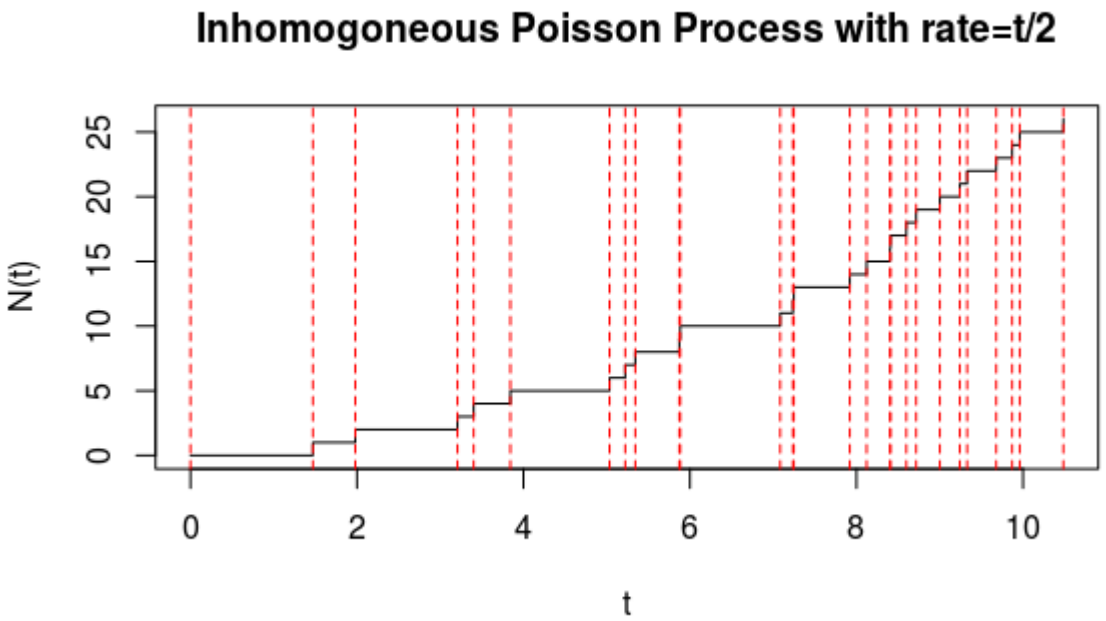
- Homogeneous

$$P\{X(t) = n\} = e^{-\lambda t}\frac{(\lambda t)^n}{n!} \quad n = 0,1,2,\ldots$$



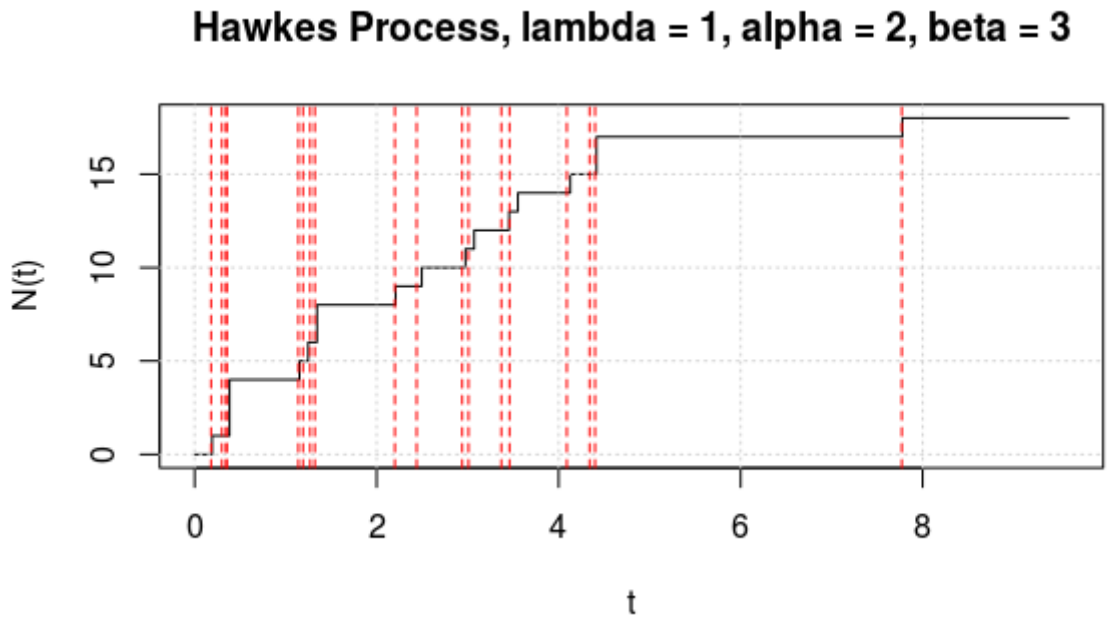
- Inhomogeneous

$$P\{X(t) = n\} = e^{-\Lambda(t)}\frac{\{\Lambda(t)\}^n}{n!} \quad n = 0,1,2,\ldots$$



Hawkes Process (Thinning Procedure)

$$\Lambda(t) = \lambda_0 + \sum_{t_i<t} \alpha e^{-\beta(t-t_i)}$$



Thank you

Simulation of Hawkes Process

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