A review on Poisson, Cox, Hawkes, Shot-Noise and Dynamic Contagion processes

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Abstract

In this seminary I will provide a global description of some classes of Stochastic Processes that have as fundamental building block the Poisson process. In particular Cox processes (doubly stochastic Poisson process) which are characterized by the fact that the intensity does not only depend on time but it is a stochastic process, Hawkes processes which are processes that present self exciting features and clustering effects, exponentially decaying shot-noise Poisson processes (shot-noise Poisson) which are an extension of Poisson processes where it is capable of displaying the frequency, magnitude and time period to determine the effect on points, and the dynamic contagion processes where the intensity generalizes those one of Hawkes and Cox processes with exponentially decaying shot noise intensity.

References

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