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Advanced Binomial Calculus

ABSTRACT

Stochastic processes are models of random phenomena which evolve over time. The most fundamental stochastic process is known as Brownian motion. This process has many properties which might seem unusual from the perspective of calculus. For example, realizations of a Brownian motion process are continuous functions which are nowhere differentiable. As a consequence, the usual rules of calculus, like the chain rule, do not apply to Brownian motion or many other stochastic processes. Thus there is need for a "new" theory of calculus for stochastic processes. In this talk, I will introduce Brownian motion, discuss how classical calculus breaks down, and motivate the theory of stochastic calculus and its applications.

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