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Title:	Jump diffusion models for option pricing with emphasis on stochastic calculus
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Abstract:	The aim of thesis is to cover the jump diffusion models for option pricing. A detailed theory on stochastic processes and stochastic calculus has been covered rigorously. The Black Scholes option pricing formula has been derived using the Equivalent Martingale Measure approach which utilises the application of Girsanov's theorem to change the underlying probability measure. The jump diffusion models proposed by Merton(M.J.D. model) and Kou(K.J.D. model) has been covered and the parameter estimation of these models has been covered for Infosys stock using Maximum Likelihood Estimate(M.L.E.) approach. It has been shown that the K.J.D. model fits best to the Infosys stock. A brief discussion on implied volatility has been carried out and implied volatility plots for TATA Motors stock and NIFTY50 stock index has been obtained respectively. Finally for modeling time varying volatility the GARCH(1,1) model using gaussian and student's t distribution innovation respectively with parameter estimation for Reliance stock has been covered and it has been shown that the GARCH(1,1) model with student's t distribution innovation models the volatility better for Reliance stock as compared to gaussian innovation.
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