Using high performance computing and Monte Carlo simulation for pricing american options

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High performance computing (HPC) is a very attractive and relatively new area of research, which gives promising results in many applications. In this paper HPC is used for pricing of American options. Although the American options are very significant in computational finance; their valuation is very challenging, especially when the Monte Carlo simulation techniques are used. For getting the most accurate price for these types of options we use Quasi Monte Carlo simulation, which gives the best convergence. Furthermore, this algorithm is implemented on both GPU and CPU. Additionally, the CUDA architecture is used for harnessing the power and the capability of the GPU for executing the algorithm in parallel which is later compared with the serial implementation on the CPU. In conclusion this paper gives the reasons and the advantages of applying HPC in computational finance.

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