Optiver

STOCK QUOTING & NEWS FEED PROCESSING

Introduction

In this assignment you will modify an existing stock quoting algorithm to deal with incoming news messages and social media feeds using recently developed automated text processing tools in Python.

A basic strategy places simultaneous buy and sell (also called ‘bid’ and ‘ask’) orders into the order book on an exchange on a continuous basis. In doing so it attempts to capture the so-called bid-ask spread, that is, the difference between the prices of such orders.

The above is called a ‘quoting’ or ‘market-making’ strategy. It is successful if the direction of opposing market orders, those who trade against you, is essentially random. In such cases, it is likely that a buy trade might be followed by a sell trade, or vice versa, leaving you with a zero net position, and returning a profit of the difference in the bid price and the ask price you traded on. This combination of trades is called a “scalp” trade. This strategy adds value to the market through “adding liquidity”. This is because it ensures other market participants always have someone to trade against. In this case this is you, the market maker. Quoting is considered a passive strategy, as through the insertion of our limit orders we show the market our intentions to trade and wait for other market participants to come to us to make a trade if they so desire.

It sounds almost perfect, doesn’t it? Sadly in practice, things aren’t as straight-forward as they might appear. Market prices are not static and there are competing market makers offering the same service. It is therefore crucial to determine the right prices and price offsets to use, and to manage the risk of the outstanding positions. For example, a quoting strategy can fail to be profitable if the opposing market orders are not random but informed. That is, whenever someone buys from you (which means you sell) the market tends to go up. Whenever the inverse happens (you buy just because someone else sells), it happens to be just before the market goes down. That’s exactly what you don’t want! The small profit from the bid-ask spread you quoted can quickly evaporate under such circumstances. This is called ‘adverse selection’. This occurs all the time in real markets. This is because if someone trades, they usually have a reason for doing so.

In this assignment we investigate, based examples we encountered in real markets, one of the ways in which changing market circumstances can affect the viability of a market making strategy. We also explore what kinds of modifications to the algorithm are required to ensure the strategy still has a future.

Good luck!

To find out more (or if you want to get started), read the official challenge description here:

https:// hackathon-tum.optibook.net