Trading in Real Time with R and IBrokers

Jeffrey A. Ryan
insight algorithmics, inc.
jeffrey.ryan@insightalgo.com
Chicago, Illinois USA

Keywords: event processing, real-time trading, streaming data, sockets, API-programming

As financial trading strategies become more complex, the integration of software and strategy becomes intertwined. So-called "black-box" trading involves computer-driven strategy and execution in the absence of direct human action. These strategies can be applied in time-scales ranging from end-of-day decision and trade execution, all the way to decisions at the microsecond level.

Most automated trading in the sub-second range requires a fast compiled language as well as high-performance hardware and dedicated connections. Lower frequency trading, such as one second intervals and greater, lends itself to lower performance requirements. R offers facilities to handle socket-based connections on commodity hardware that can easily exceed the more modest performance requirements of this style of trading. This talk will explore the latter approach using the R package **IBrokers** to interface with the popular Interactive Brokers brokerage platform via their proprietary and free API.

The **IBrokers** package allows for event-driven programming using R. The package combines interactive access to historical market data, real-time streaming of sub-second market data on cash, equity, future and option products from multiple markets, as well as the ability to seamlessly manage order execution and account functionality.

This talk will explore the design aspects of recreating an external API within the context of R — from managing socket connections and streaming data, to handling asynchronous path-dependent events using functional closures. The talk will include examples of many of the features that may be of interest to those looking to implement event-processing code in R, as well as a look at specific functionality related to automating a real strategy with a personal or professional account with Interactive Brokers.

Interactive Brokers is a registered trademark of Interactive Brokers LLC. **IBrokers***, insight algorithmics inc. and the author are in no way affiliated or endorsed by Interactive Brokers.*

References

Jeffrey A. Ryan (2010). IBrokers package
http://cran.r-project.org/web/packages/IBrokers/index.html.