Real-Time Portfolio/Market Monitoring with R

A Lightning Talk for R/Finance 2012

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Probably

After all. . .

```
R> library(fortunes); fortune("pizza")
```

After all...

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Roger D. Peng: I don't think anyone actually believes that R is designed
   to make *everyone* happy. For me, R does about 99% of the things I need
   to do but sadly, when I need to order a pizza,
   I still have to pick up the telephone.


Douglas Bates: There are several chains of pizzerias in the U.S. that
   provide for Internet-based ordering (e.g. www.papajohnsonline.com) so,
   with the Internet modules in R, it's only a matter of time before you
   will have a pizza-ordering function available.

Brian D. Ripley: Indeed, the GraphApp toolkit (used for the RGui interface
    under R for Windows, but Guido forgot to include it) provides one
    for use in Sydney, Australia.
   -- Roger D. Peng, Douglas Bates, and Brian D. Ripley
      R-help (June 2004)
```

Signal Spotting

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- ```
  `watch` <- function(tick, level, dir = c(">","<"))
      ind <- match.fun(match.arg(dir))
      if(ind(getQuote(tick, what = "l1")[[2]], level)){
          print(if(ind == `>`) "Sell" else "Buy", tick, "now!"))
          return(TRUE)
      }
      return(FALSE)
  }
  ```
  ```

Signal Spotting: Background Sessions

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- ```
  Rscript -e 'repeat{Sys.sleep(2); if(watch(tick, level, dir)){
      print("There\'s gold in them thar\' hills!"); break}}' &
  ```
  ```

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- Use the OS to keep R looking for signals in the background (&)
- Printing to standard out will interrupt most terminal apps (including other R sessions)
- `Rscript -e 'repeat{Sys.sleep(2); if(watch(tick, level, dir)){ print("There\'s gold in them thar\' hills!"); break}}' &`
- More assertive: `alert()` or `system(open Loud.mp3)`

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- Callback Mechanism
- Tricky to get a good balance between interactivity and reactivity
- I like to check every ≈ 20 callbacks:

Warning: black magic follows!

Signal Spotting: Interactive Sessions

```
addWatch <- function(tick, level, dir = c(">","<"), skip = 20){
  dir <- match.arg(dir)
  name <- paste(tick, level, as.character(dir), skip, sep = "_")
  dir <- match.fun(dir)

  counter <- function(tick, level, dir, skip){
    cnt <- 0
    skip <- skip

    watch <- function(tick = tick, level = level, dir = dir){
      if(!(cnt %% skip)){
        if(dir(getQuote(tick, what = "l1")[[2]],level)){
          cat(if(identical(dir, `>`)) "Sell" else "Buy", tick, "now!\n")
        } else {
          cat("No signal from",name,"\n")
        }
      }
    }

    function(expr, value, ok, visible){
      cnt <<- cnt + 1
      watch(tick, level, dir)
      TRUE
    }
  }

  addTaskCallback(counter(tick, level, dir, skip), name = name)
}
```

Signal Spotting: Interactive Sessions

```
removeWatch <- function(){
  cat("Select a Indicator Watch to remove: \n")
  res <- menu(getTaskCallbackNames(), FALSE, NULL)
  removeTaskCallback(res)
}

activeWatches <- function(){
  getTaskCallbackNames()
}
```

Demo

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This functionality is at the core of a forthcoming package (alpha release soon on R-Forge) designed to replicate the `Bloomberg` terminal experience within `R`

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- support for compound indicators
- active portfolio monitoring tools
- attractive P&L reporting
- tight integration with `quantstrat`.

Thank you

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Any questions?

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I'm still looking for a witty name ...