Rle Tips and Tricks

Patrick Aboyoun

October 30, 2017

```
> rollmeanRle <- function (x, k)</pre>
+ {
   n \leftarrow length(x)
    cumsum(c(Rle(sum(window(x, 1, k))), window(x, k + 1, n) - window(x, 1, n - k))) / k
> rollvarRle <- function(x, k)
   n \leftarrow length(x)
   means <- rollmeanRle(x, k)</pre>
   nextMean \leftarrow window(means, 2, n - k + 1)
    cumsum(c(Rle(sum((window(x, 1, k) - means[1])^2)),
   k * diff(means)^2 -
    (window(x, 1, n - k) - nextMean)^2 +
    (window(x, k + 1, n) - nextMean)^2)) / (k - 1)
> rollcovRle <- function(x, y, k)</pre>
+ {
   n \leftarrow length(x)
   meanX <- rollmeanRle(x, k)</pre>
   meanY <- rollmeanRle(y, k)</pre>
   nextMeanX \leftarrow window(meanX, 2, n - k + 1)
   nextMeanY \leftarrow window(meanY, 2, n - k + 1)
    cumsum(c(Rle(sum((window(x, 1, k) - meanX[1]) * (window(y, 1, k) - meanY[1]))),
   k * diff(meanX) * diff(meanY) -
    (window(x, 1, n - k) - nextMeanX) * (window(y, 1, n - k) - nextMeanY) +
    (window(x, k + 1, n) - nextMeanX) * (window(y, k + 1, n) - nextMeanY))) / (k - 1)
> rollsdRle <- function(x, k)</pre>
+ {
+ sqrt(rollvarRle(x, k))
> rollcorRle <- function(x, y, k)</pre>
  rollcovRle(x, y, k) / (rollsdRle(x, k) * rollsdRle(y, k))
```