runif

Joshua

25/05/2020

```r
knitr::opts_chunk$set(echo = TRUE)
rm(list=ls())
library('forecast')
```

```
## Warning: package 'forecast' was built under R version 3.5.2
```

```r
library('smooth')
```

```
## Warning: package 'smooth' was built under R version 3.5.2

## Loading required package: greybox

## Warning: package 'greybox' was built under R version 3.5.2

## Package "greybox", v0.5.8 loaded.

## This is package "smooth", v2.5.5
```

```r
library('beanplot')
library('pastecs')
library('scales')
library('ggplot2')

load('runif.Rdata')


iter<-20000
```

ppl vs length

```r
x_axis<-c(40,120,480,1200,4800)
y_40<-c(mean(sapply(re_40[[1]], "[[", 1)),mean(sapply(re_40[[2]], "[[", 1)),
        mean(sapply(re_40[[3]], "[[", 1)))
y_120<-c(mean(sapply(re_120[[1]], "[[", 1)),mean(sapply(re_120[[2]], "[[", 1)),
        mean(sapply(re_120[[3]], "[[", 1)))
y_480<-c(mean(sapply(re_480[[1]], "[[", 1)),mean(sapply(re_480[[2]], "[[", 1)),
        mean(sapply(re_480[[3]], "[[", 1)))
y_1200<-c(mean(sapply(re_1200[[1]], "[[", 1)),mean(sapply(re_1200[[2]], "[[", 1)),
        mean(sapply(re_1200[[3]], "[[", 1)))
y_4800<-c(mean(sapply(re_4800[[1]], "[[", 1)),mean(sapply(re_4800[[2]], "[[", 1)),
        mean(sapply(re_4800[[3]], "[[", 1)))
y_axis<-c(y_40,y_120,y_480,y_1200,y_4800)
mac<-matrix(y_axis,nrow = 3,ncol = 5)
mac<-t(mac)
rownames(mac)<-c('40','120','480','1200','4800')
```

```r
colnames(mac)<-c("DGP", "DJ","CF")
mac
```

```
##              DGP         DJ         CF
## 40    0.05412905 0.06018361 0.05877705
## 120   0.04861315 0.05144898 0.05028136
## 480   0.04871668 0.05008615 0.04976539
## 1200  0.05090786 0.05147397 0.05197048
## 4800  0.04963273 0.04926593 0.05064021
```

```r
v_40<-c(sd(sapply(re_40[[1]], "[[", 1)),sd(sapply(re_40[[2]], "[[", 1)),
        sd(sapply(re_40[[3]], "[[", 1)))
v_120<-c(sd(sapply(re_120[[1]], "[[", 1)),sd(sapply(re_120[[2]], "[[", 1)),
        sd(sapply(re_120[[3]], "[[", 1)))
v_480<-c(sd(sapply(re_480[[1]], "[[", 1)),sd(sapply(re_480[[2]], "[[", 1)),
        sd(sapply(re_480[[3]], "[[", 1)))
v_1200<-c(sd(sapply(re_1200[[1]], "[[", 1)),sd(sapply(re_1200[[2]], "[[", 1)),
        sd(sapply(re_1200[[3]], "[[", 1)))
v_4800<-c(sd(sapply(re_4800[[1]], "[[", 1)),sd(sapply(re_4800[[2]], "[[", 1)),
        sd(sapply(re_4800[[3]], "[[", 1)))
v_axis<-c(v_40,v_120,v_480,v_1200,v_4800)
var<-matrix(v_axis,nrow = 3,ncol = 5)
var<-t(var)
rownames(var)<-c('40','120','480','1200','4800')
colnames(var)<-c("DGP", "DJ","CF")
var
```

```
##              DGP         DJ         CF
## 40    0.34106756 0.33234543 0.37252914
## 120   0.51825239 0.50069727 0.54124931
## 480   0.22211153 0.18873163 0.23296108
## 1200  0.09059358 0.08440634 0.09159733
## 4800  0.12810855 0.12224420 0.12901620
```

```r
par(mar=c(par('mar')[1:3], 0))
plot.new()
l <- legend(0, 0, bty='n',c("DGP", "DJ","PM"),plot=FALSE, pch=1:3,col=1:3)
w <- grconvertX(l$rect$w, to='ndc') - grconvertX(0, to='ndc')
par(omd=c(0, 1-w, 0, 1))
matplot(mac, type = c("b"),pch=c(1,2,4),col = c(1,2,4),xaxt = "n",yaxt = "n"
        ,xlab = 'data length',ylab = 'percetage profit loss')
axis(1, at=1:5, labels=x_axis)
axis(2, at=pretty(y_axis), lab=paste0(pretty(y_axis) * 100, "%"), las=TRUE)
legend(par('usr')[2], par('usr')[4], bty='n', xpd=NA
        ,c("DGP", "DJ","PM"), pch=c(1,2,4),col=c(1,2,4))
```
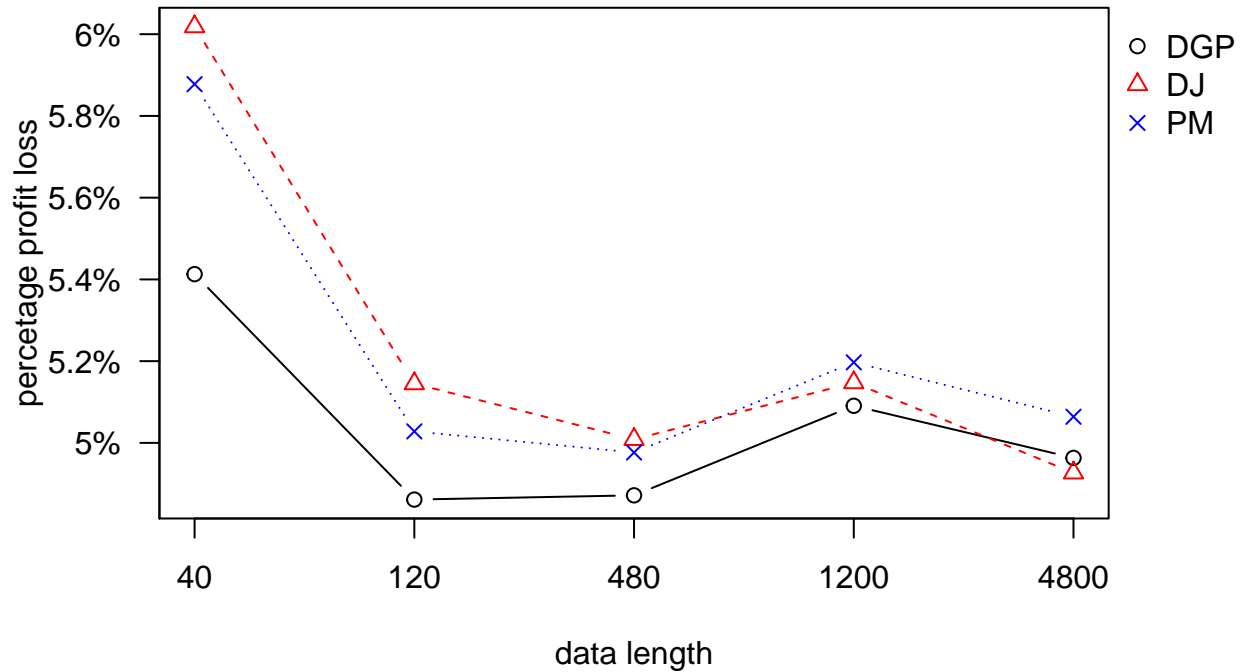
sl vs length

```r
x_axis<-c(40,120,480,1200,4800)
y_40<-c(mean(sapply(re_40[[1]], "[[", 2)),mean(sapply(re_40[[2]], "[[", 2)),
        mean(sapply(re_40[[3]], "[[", 2)))
y_120<-c(mean(sapply(re_120[[1]], "[[", 2)),mean(sapply(re_120[[2]], "[[", 2)),
        mean(sapply(re_120[[3]], "[[", 2)))
y_480<-c(mean(sapply(re_480[[1]], "[[", 2)),mean(sapply(re_480[[2]], "[[", 2)),
        mean(sapply(re_480[[3]], "[[", 2)))
y_1200<-c(mean(sapply(re_1200[[1]], "[[", 2)),mean(sapply(re_1200[[2]], "[[", 2)),
        mean(sapply(re_1200[[3]], "[[", 2)))
y_4800<-c(mean(sapply(re_4800[[1]], "[[", 2)),mean(sapply(re_4800[[2]], "[[", 2)),
        mean(sapply(re_4800[[3]], "[[", 2)))
y_axis<-c(y_40,y_120,y_480,y_1200,y_4800)
mac<-matrix(y_axis,nrow = 3,ncol = 5)
mac<-t(mac)
rownames(mac)<-c('40','120','480','1200','4800')
colnames(mac)<-c("DGP", "DJ","CF")
mac
```

```
##          DGP     DJ      CF
## 40    0.29900 0.1956 0.32050
## 120   0.29835 0.2268 0.30775
## 480   0.29505 0.2377 0.30240
## 1200  0.29780 0.2402 0.30455
## 4800  0.30320 0.2374 0.30565
```

```r
v_40<-c(sd(sapply(re_40[[1]], "[[", 2)),sd(sapply(re_40[[2]], "[[", 2)),
        sd(sapply(re_40[[3]], "[[", 2)))
v_120<-c(sd(sapply(re_120[[1]], "[[", 2)),sd(sapply(re_120[[2]], "[[", 2)),
        sd(sapply(re_120[[3]], "[[", 2)))
v_480<-c(sd(sapply(re_480[[1]], "[[", 2)),sd(sapply(re_480[[2]], "[[", 2)),
```

```
        sd(sapply(re_480[[3]], "[[", 2)))
v_1200<-c(sd(sapply(re_1200[[1]], "[[", 2)),sd(sapply(re_1200[[2]], "[[", 2)),
        sd(sapply(re_1200[[3]], "[[", 2)))
v_4800<-c(sd(sapply(re_4800[[1]], "[[", 2)),sd(sapply(re_4800[[2]], "[[", 2)),
        sd(sapply(re_4800[[3]], "[[", 2)))
v_axis<-c(v_40,v_120,v_480,v_1200,v_4800)
var<-matrix(v_axis,nrow = 3,ncol = 5)
var<-t(var)
rownames(var)<-c('40','120','480','1200','4800')
colnames(var)<-c("DGP", "DJ","CF")
var
```

```
##           DGP        DJ        CF
## 40   0.4578313 0.3966718 0.4666804
## 120  0.4575453 0.4187726 0.4615740
## 480  0.4560766 0.4256851 0.4593090
## 1200 0.4573025 0.4272155 0.4602281
## 4800 0.4596524 0.4255000 0.4606937
```

```
par(mar=c(par('mar')[1:3], 0))
plot.new()
l <- legend(0, 0, bty='n',c("DGP", "DJ","PM"),plot=FALSE, pch=1:3,col=1:3)
w <- grconvertX(l$rect$w, to='ndc') - grconvertX(0, to='ndc')
par(omd=c(0, 1-w, 0, 1))
matplot(mac, type = c("b"),pch=c(1,2,4),col = c(1,2,4),xaxt = "n"
        ,xlab = 'data length',ylab = 'service level')
axis(1, at=1:5, labels=x_axis)
legend(par('usr')[2], par('usr')[4], bty='n', xpd=NA
        ,c("DGP", "DJ","PM"), pch=c(1,2,4),col=c(1,2,4))
```