runif

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

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

```
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
```

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

load('runif.Rdata')


iter<-20000
```

ppl vs length

```
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')
```

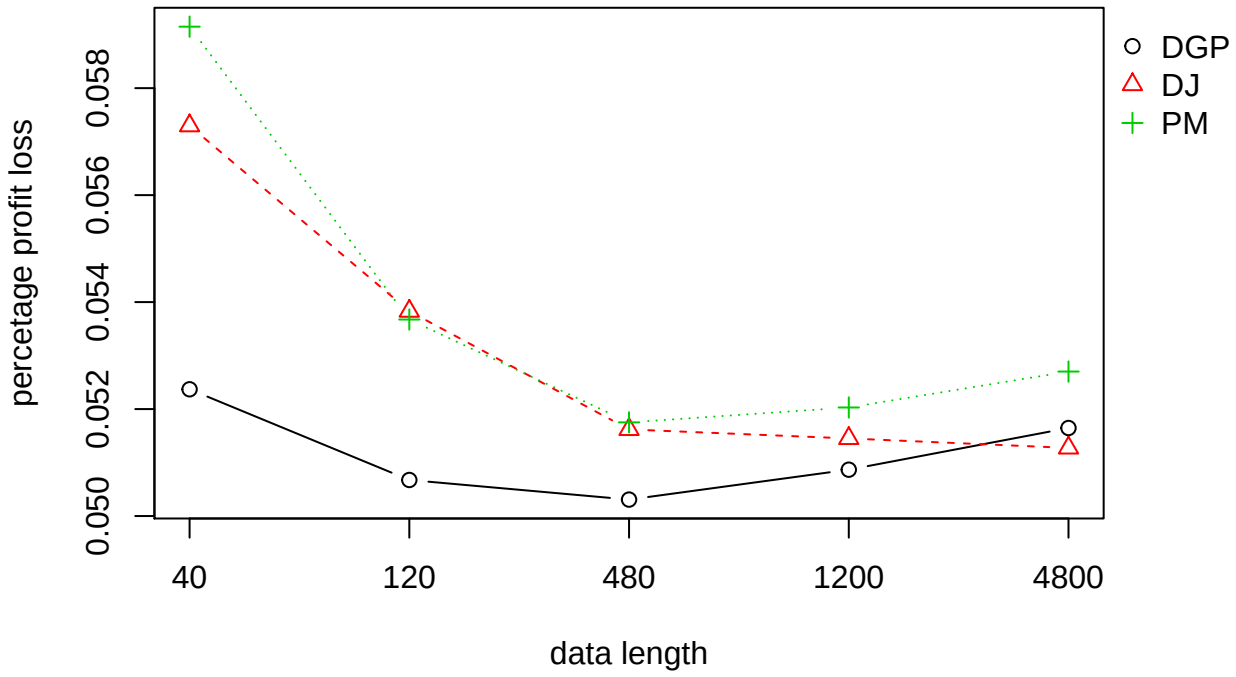
```r
colnames(mac)<-c("DGP", "DJ","CF")
mac
```

```
##             DGP         DJ         CF
## 40   0.05236999 0.05729761 0.05914920
## 120  0.05067413 0.05383036 0.05367412
## 480  0.05030789 0.05161920 0.05175162
## 1200 0.05086648 0.05145084 0.05202975
## 4800 0.05164572 0.05127352 0.05270124
```

```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   0.09527237 0.09396095 0.11385300
## 120  0.08822607 0.08375629 0.09396513
## 480  0.14236613 0.13027228 0.14738238
## 1200 0.09314779 0.08680173 0.09523008
## 4800 0.10753826 0.10128942 0.10805198
```

```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=1:3,col = 1:3,xaxt = "n"
        ,xlab = 'data length',ylab = 'percetage profit loss')
axis(1, at=1:5, labels=x_axis)
legend(par('usr')[2], par('usr')[4], bty='n', xpd=NA
       ,c("DGP", "DJ","PM"), pch=1:3,col=1:3)
```



sl vs length

```
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   0.18740 0.19940 0.34515
## 120  0.25115 0.22455 0.30870
## 480  0.28420 0.23565 0.30015
## 1200 0.29620 0.24150 0.30230
## 4800 0.29925 0.23880 0.30470
```

```
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   0.3902420 0.3995593 0.4754290
## 120  0.4336855 0.4172961 0.4619686
## 480  0.4510438 0.4244150 0.4583345
## 1200 0.4565917 0.4280034 0.4592660
## 4800 0.4579410 0.4263609 0.4602918
```

```
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=1:3,col = 1:3,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=1:3,col=1:3)
```