Relatorio

Luiz Fernando Palin Droubi

18 de julho de 2019

Carregar arquivo de dados

```
# Cargamos el fichero de datos
# Debe tener una estructura igual a este, es decir,
# que las coordenadas X e Y estan en las columnas 3 y 5
# (la X) y 4 y 6 (la Y)
# Nombre del fichero de datos
fichero <- "Estatistica_8PCT.csv"
dados <- read.csv(fichero, header=TRUE, sep=";", dec=",")
dados[,2] <- 0
```

Calcular os erros em X e Y

```
puncontrol <- list()
for (i in 1:100) {
  x <- (i-1)*35+1
  puncontrol[[i]] <- dados[x:(x+33), ]
  # Calculamos los errores en X e Y
  puncontrol[[i]]$E_X <- puncontrol[[i]][,5]- puncontrol[[i]][,3]
  puncontrol[[i]]$E_Y <- puncontrol[[i]][,6]- puncontrol[[i]][,4]
}
```

EstatÃsticas BÃ¡sicas

```
basicStats(puncontrol[[params$j]]$E_X)
```

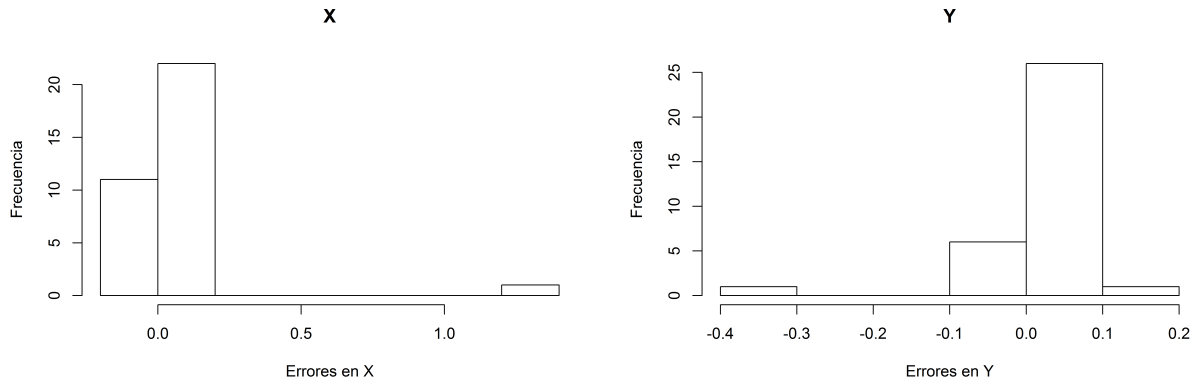
```
##             X..puncontrol..params.j...E_X
## nobs                             34.000000
## NAs                               0.000000
## Minimum                          -0.167400
## Maximum                           1.316900
## 1. Quartile                      -0.003675
## 3. Quartile                       0.027225
## Mean                              0.045250
## Median                            0.013800
## Sum                               1.538500
## SE Mean                           0.039034
## LCL Mean                         -0.034164
## UCL Mean                          0.124664
## Variance                          0.051803
## Stdev                             0.227603
```

```
## Skewness                          5.099646
## Kurtosis                         25.684108
```

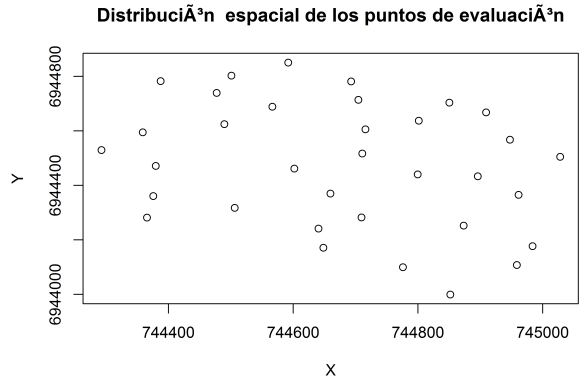
```
basicStats(puncontrol[[params$j]]$E_Y)
```

```
##             X..puncontrol..params.j...E_Y
## nobs                             34.000000
## NAs                               0.000000
## Minimum                          -0.377000
## Maximum                           0.163000
## 1. Quartile                       0.012000
## 3. Quartile                       0.055750
## Mean                              0.022029
## Median                            0.031500
## Sum                               0.749000
## SE Mean                           0.013554
## LCL Mean                         -0.005546
## UCL Mean                          0.049605
## Variance                          0.006246
## Stdev                             0.079032
## Skewness                         -3.597887
## Kurtosis                         16.443738
```

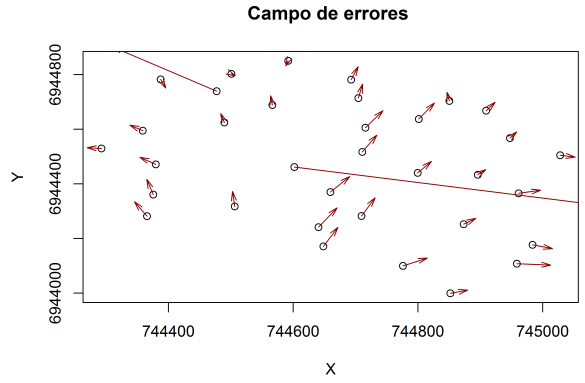
```
hist(puncontrol[[params$j]]$E_X, main="X", xlab="Errores en X", ylab="Frecuencia")
hist(puncontrol[[params$j]]$E_Y, main="Y", xlab="Errores en Y", ylab="Frecuencia")
```



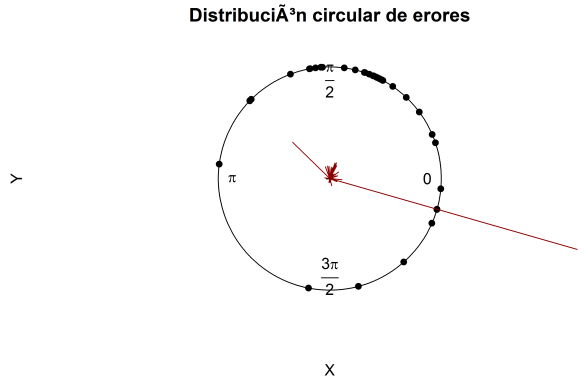

```
plot(puncontrol[[params$j]][,3], puncontrol[[params$j]][,4] ,
     main="DistribuciÃ³n  espacial de los puntos de evaluaciÃ³n",
     xlab="X", ylab="Y")
```




```
# Cambia este factor segÃºn necesites
fescala <- 1000
plot(puncontrol[[params$j]][,3], puncontrol[[params$j]][,4],
     main="Campo de errores ", xlab="X", ylab="Y")
arrows(puncontrol[[params$j]][,3],
       puncontrol[[params$j]][,4],
       puncontrol[[params$j]][,3] + fescala*puncontrol[[params$j]]$E_X,
       puncontrol[[params$j]][,4] + fescala* puncontrol[[params$j]]$E_Y,
       col= 'dark red', length = 0.1, angle = 15)
```




```
# Cambia el factor de escala circular segÃºn necesites
fescalaCir <- 2
datos_cir2d <- circular(atan2(puncontrol[[params$j]]$E_Y, puncontrol[[params$j]]$E_X))
modulo2d <- sqrt(puncontrol[[params$j]]$E_X^2+puncontrol[[params$j]]$E_Y^2)
plot.circular(datos_cir2d)
title(main="DistribuciÃ³n circular de erores", xlab="X", ylab="Y")
segments(0, 0,
         fescalaCir*puncontrol[[params$j]]$E_X,
         fescalaCir* puncontrol[[params$j]]$E_Y,
         col= 'dark red')
```

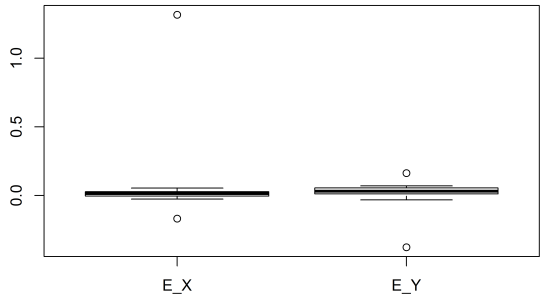



```
QCoH_RANDOMNESS(puncontrol[[params$j]][c(7,8)])
```

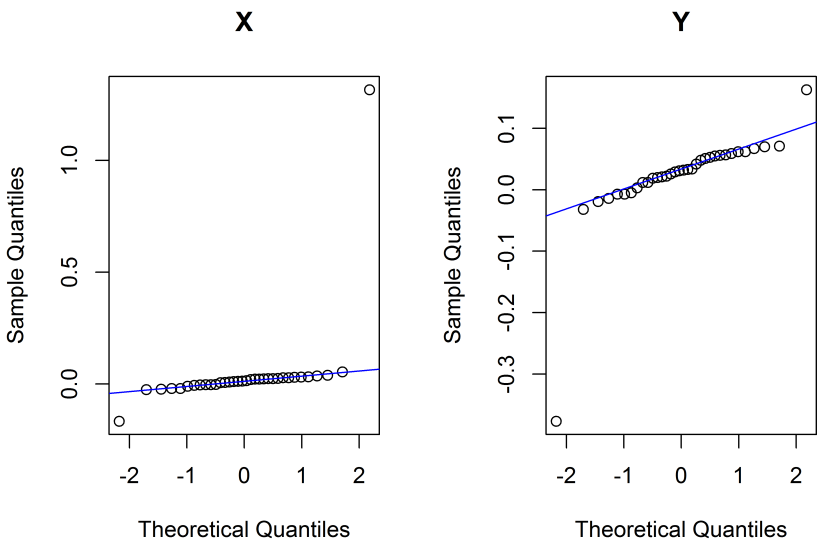
```
## [1] "El resultado del test de aleaoriedad para X: "
##
##  Runs Test
##
## data:  errorespos[, 1]
## statistic = -3.1348, runs = 9, n1 = 17, n2 = 17, n = 34, p-value =
## 0.001719
## alternative hypothesis: nonrandomness
##
## [1] "El resultado del test de aleaoriedad para Y: "
##
##  Runs Test
##
## data:  errorespos[, 2]
## statistic = -3.1348, runs = 9, n1 = 17, n2 = 17, n = 34, p-value =
## 0.001719
## alternative hypothesis: nonrandomness
```

```
QCoH_OUTLIERS(puncontrol[[params$j]][c(7,8)])
```

```
## [1] "El nÃºmero de casos fuera de rango en X es:  1"
## [1] "El nÃºmero de casos fuera de rango en Y es:  0"
```




```
QCoH_NORMALITY_G(puncontrol[[params$j]][c(7,8)])
```




```
QCoH_NORMALITY_A_KS(puncontrol[[params$j]][c(7,8)])
```

```
## Warning in ks.test(x, "pnorm", alternative = "two.sided"): ties should not
## be present for the Kolmogorov-Smirnov test
```

```
## Warning in ks.test(x, "pnorm", alternative = "less"): ties should not be
## present for the Kolmogorov-Smirnov test
```

```
## Warning in ks.test(x, "pnorm", alternative = "greater"): ties should not be
## present for the Kolmogorov-Smirnov test
```

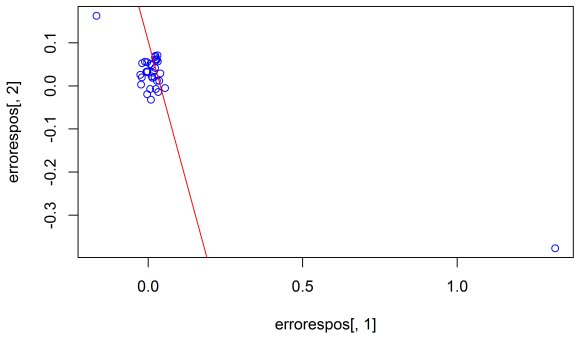
```
##
## Title:
##  Normality test
##
## Test Results:
##   STATISTIC:
##     D: 0.4603
##   P VALUE:
##     Alternative Two-Sided: 4.12e-07
##     Alternative      Less: 2.06e-07
##     Alternative   Greater: 4.521e-07
##
## Description:
##  X coordinate
##
##
## Title:
##  Normality test
##
## Test Results:
##   STATISTIC:
##     D: 0.4578
##   P VALUE:
##     Alternative Two-Sided: 1.291e-06
##     Alternative      Less: 6.457e-07
```

```
##     Alternative   Greater: 1.671e-06
##
## Description:
##  Y coordinate
```

```
QCoH_HOMOCEDAS_BAR(puncontrol[[params$j]][c(7,8)])
```

```
##
## Title:
##  Bartlett Test for Homogeneity of Variances
##
## Test Results:
##   STATISTIC:
##     Bartlett's Chi-squared: 31.1061
##   P VALUE:
##     2.443e-08
##
## Description:
##  Thu Jul 18 14:47:37 2019
```

```
QCoH_CORRELATION_G(puncontrol[[params$j]][c(7,8)])
```




```
QCoH_CORRELATION_A(puncontrol[[params$j]][c(7,8)])
```

```
##            E_X        E_Y
## E_X  1.0000000 -0.9189048
## E_Y -0.9189048  1.0000000
```

```
QCoH_CORRELATION_A_SPR(puncontrol[[params$j]][c(7,8)])
```

```
## Warning in cor.test.default(errorespos[, 1], errorespos[, 2], method =
## "spearman"): Cannot compute exact p-value with ties
```

```
##
##  Spearman's rank correlation rho
##
## data:  errorespos[, 1] and errorespos[, 2]
## S = 7185.1, p-value = 0.5821
## alternative hypothesis: true rho is not equal to 0
## sample estimates:
##        rho
## -0.09779951
```