Texto

El contenido generado por IA puede ser incorrecto.

Texto, Carta

El contenido generado por IA puede ser incorrecto.

Tabla

El contenido generado por IA puede ser incorrecto.

# EJEMPLO DE GUTIERREZ 2^K=3  
  
datos = read.table("DATA2K3.txt", T)  
  
datos$AB = datos$A\*datos$B  
datos$AC = datos$A\*datos$C  
datos$BC = datos$B\*datos$C  
datos$ABC = datos$A\*datos$B\*datos$C  
attach(datos)  
  
ypA<-tapply(Y,A,mean)  
ypA

## -1 1   
## 0.0250 0.0055

Aefe<-ypA[2]-ypA[1]  
Aefe

## 1   
## -0.0195

ypB<-tapply(Y,B,mean)  
ypB

## -1 1   
## 0.0185 0.0120

Befe<-ypB[2]-ypB[1]  
Befe

## 1   
## -0.0065

#   
# ypAB<-tapply(y,AB,mean)  
#   
# AB<-ypAB[2]-ypAB[1]  
# AB  
  
# ANOVA EN EL DISEÑO 2K=3  
  
mod<-lm(Y~A+B+C+A\*B +A\*C+B\*C + A\*B\*C, data = datos)  
summary(mod)

##   
## Call:  
## lm(formula = Y ~ A + B + C + A \* B + A \* C + B \* C + A \* B \*   
## C, data = datos)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.0080 -0.0025 0.0000 0.0025 0.0080   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 0.015250 0.001346 11.327 3.32e-06 \*\*\*  
## A -0.009750 0.001346 -7.242 8.87e-05 \*\*\*  
## B -0.003250 0.001346 -2.414 0.04224 \*   
## C -0.004250 0.001346 -3.157 0.01346 \*   
## A:B -0.000250 0.001346 -0.186 0.85731   
## A:C 0.004750 0.001346 3.528 0.00775 \*\*   
## B:C 0.000250 0.001346 0.186 0.85731   
## A:B:C 0.001250 0.001346 0.928 0.38032   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.005385 on 8 degrees of freedom  
## Multiple R-squared: 0.9107, Adjusted R-squared: 0.8326   
## F-statistic: 11.66 on 7 and 8 DF, p-value: 0.001238

# Otra forma de encontrar los efectos estimados  
  
betaest<-coefficients(mod)  
efectosest<-2\*betaest[2:8]  
data.frame(efectosest)

## efectosest  
## A -0.0195  
## B -0.0065  
## C -0.0085  
## A:B -0.0005  
## A:C 0.0095  
## B:C 0.0005  
## A:B:C 0.0025

# sumas de cuadrados y ANVA  
anva<-aov(mod)  
summary(anva)

## Df Sum Sq Mean Sq F value Pr(>F)   
## A 1 0.001521 0.001521 52.448 8.87e-05 \*\*\*  
## B 1 0.000169 0.000169 5.828 0.04224 \*   
## C 1 0.000289 0.000289 9.966 0.01346 \*   
## A:B 1 0.000001 0.000001 0.034 0.85731   
## A:C 1 0.000361 0.000361 12.448 0.00775 \*\*   
## B:C 1 0.000001 0.000001 0.034 0.85731   
## A:B:C 1 0.000025 0.000025 0.862 0.38032   
## Residuals 8 0.000232 0.000029   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

# PARA VERIFICAR SUPUESTOS   
mod1<-lm(Y~A+B+C+A\*C)  
summary(mod1)

##   
## Call:  
## lm(formula = Y ~ A + B + C + A \* C)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.009250 -0.002000 0.000750 0.002875 0.006750   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 0.015250 0.001213 12.571 7.20e-08 \*\*\*  
## A -0.009750 0.001213 -8.037 6.25e-06 \*\*\*  
## B -0.003250 0.001213 -2.679 0.02144 \*   
## C -0.004250 0.001213 -3.503 0.00494 \*\*   
## A:C 0.004750 0.001213 3.916 0.00241 \*\*   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.004852 on 11 degrees of freedom  
## Multiple R-squared: 0.9003, Adjusted R-squared: 0.8641   
## F-statistic: 24.85 on 4 and 11 DF, p-value: 1.847e-05

CME<-deviance(mod1)/df.residual(mod1)  
beta1<-coefficients(mod1)  
I<-rep(1,length(Y))  
X<-cbind(I,A,B,C,AC)  
yest<-X%\*%beta1  
e<- Y-yest  
e

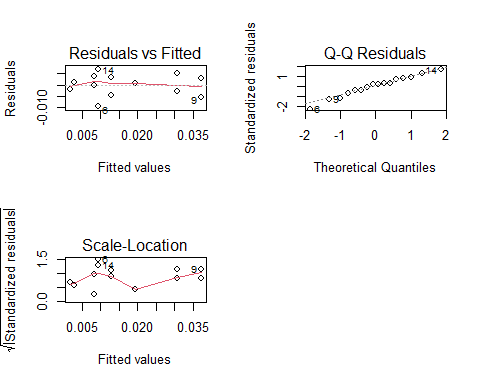
## [,1]  
## [1,] 0.00275  
## [2,] 0.00375  
## [3,] 0.00525  
## [4,] -0.00175  
## [5,] 0.00075  
## [6,] -0.00925  
## [7,] 0.00325  
## [8,] 0.00125  
## [9,] -0.00525  
## [10,] -0.00025  
## [11,] -0.00275  
## [12,] -0.00175  
## [13,] 0.00075  
## [14,] 0.00675  
## [15,] -0.00475  
## [16,] 0.00125

H<-X%\*%solve(t(X)%\*%X)%\*%t(X)  
ri<-e/sqrt(CME\*(1-diag(H)))  
ri

## [,1]  
## [1,] 0.68350674  
## [2,] 0.93205465  
## [3,] 1.30487651  
## [4,] -0.43495884  
## [5,] 0.18641093  
## [6,] -2.29906813  
## [7,] 0.80778070  
## [8,] 0.31068488  
## [9,] -1.30487651  
## [10,] -0.06213698  
## [11,] -0.68350674  
## [12,] -0.43495884  
## [13,] 0.18641093  
## [14,] 1.67769837  
## [15,] -1.18060256  
## [16,] 0.31068488

par(mfrow=c(2,2))  
plot(mod1)

## hat values (leverages) are all = 0.3125  
## and there are no factor predictors; no plot no. 5



ri<-rstandard(mod1)  
shapiro.test(ri)

##   
## Shapiro-Wilk normality test  
##   
## data: ri  
## W = 0.97513, p-value = 0.9133

library(nortest)  
ad.test(ri)

##   
## Anderson-Darling normality test  
##   
## data: ri  
## A = 0.19906, p-value = 0.8608

# VARIANZA CONSTANTE-- BREUSCH PAGAN  
library(car)

## Cargando paquete requerido: carData

ncvTest(mod1)

## Non-constant Variance Score Test   
## Variance formula: ~ fitted.values   
## Chisquare = 0.04370152, Df = 1, p = 0.83441

# GRAFICO DE LA SUPERFICIE DE RESPUESTA  
mod<-function(x1,x2){0.0152-0.00975\*x1-0.003525\*x2}  
x1<-seq(-3,-1,0.05)  
x2<-seq(60,98,2)  
z<-outer(x1,x2,mod)  
par(mfrow=c(1,1))  
persp(x1,x2,z,theta=-40,phi=30,ticktype="detailed",  
 xlab="factorA",  
 ylab="factorB",   
 zlab="y")

