Examples of R-code

Example: Approximation of the Gaussian distribution by sums of Bernoulli and uniform random variables.

```
#Generating data
repet <- 10000
size <- 100
p <- .5
data <- (rbinom(repet, size, p) - size * p) / sqrt(size * p * (1-p))
hist(data, freq = FALSE)

#Histograms

#By default you get a frequency histogram.
#To get a density you set "freq = FALSE".
#To control the number of bins use "breaks = ".

hist(data, breaks = size/2, col = 'red', freq = FALSE)

#Plotting the pdf of the normal distribution

x <- seq(min(data) - 1, max(data) + 1, .01)
lines(x, dnorm(x), col='green', lwd = 4)

#similar exercise for uniform random variables.

size <- 3
data <- runif(repet * size)
data.matrix  <- matrix(data, nrow = size)
mu <- size * 1/2
sigma <- sqrt(size * 1/12)
data <- (colSums(data.matrix) - mu )/ sigma
hist(data, breaks = 100, col = 'red', freq = FALSE)
lines(x, dnorm(x), col = 'green', lwd = 4)
```

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