

EM Algorithm

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EM Algorithm is difficult to understand

```
set.seed(123)
## set the parameters
N = 100
alpha = 36
beta = 304
M = 10 ## initial missing count

## generate some failure times and sort them
s = sort(rexp(n = N, rate = 1)) ## arbitrary rate

s = s[1:(N - M)] ## remove (M) missing records

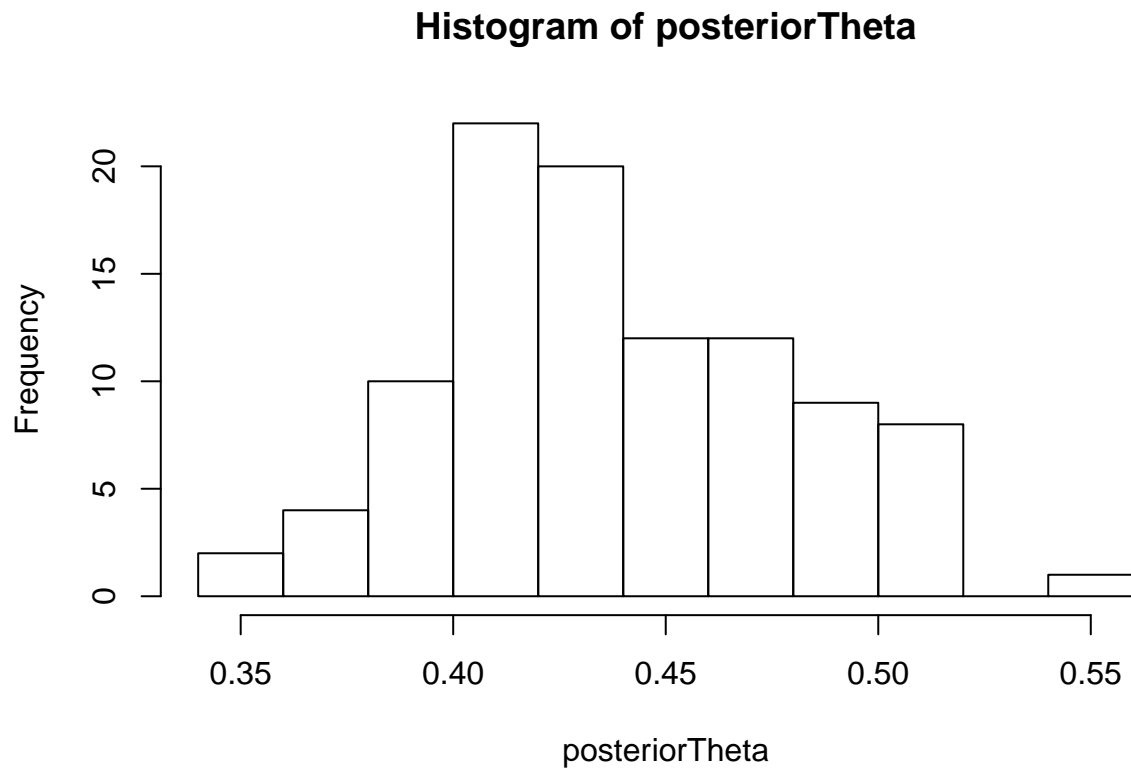
k = 50
posteriorTheta = numeric(100)
T_matrix = matrix(data = 0, nrow = (N-M), ncol = k)
for(i in 1:100){
  ## 1. sample from posterior
  theta = rgamma(n = 1, shape = alpha + sum(s), rate = beta + N )

  for(j in 1:k){
    temp <- rexp(n = 1000, rate = theta)

    T_matrix[,j] <- temp[temp > max(s)][(N-M)] ## note the condition in #2
    m = colMeans(T_matrix, na.rm = TRUE)
    T_hat = mean(m)
  }
  betaStar = beta + T_hat
  alphaStar = alpha + N

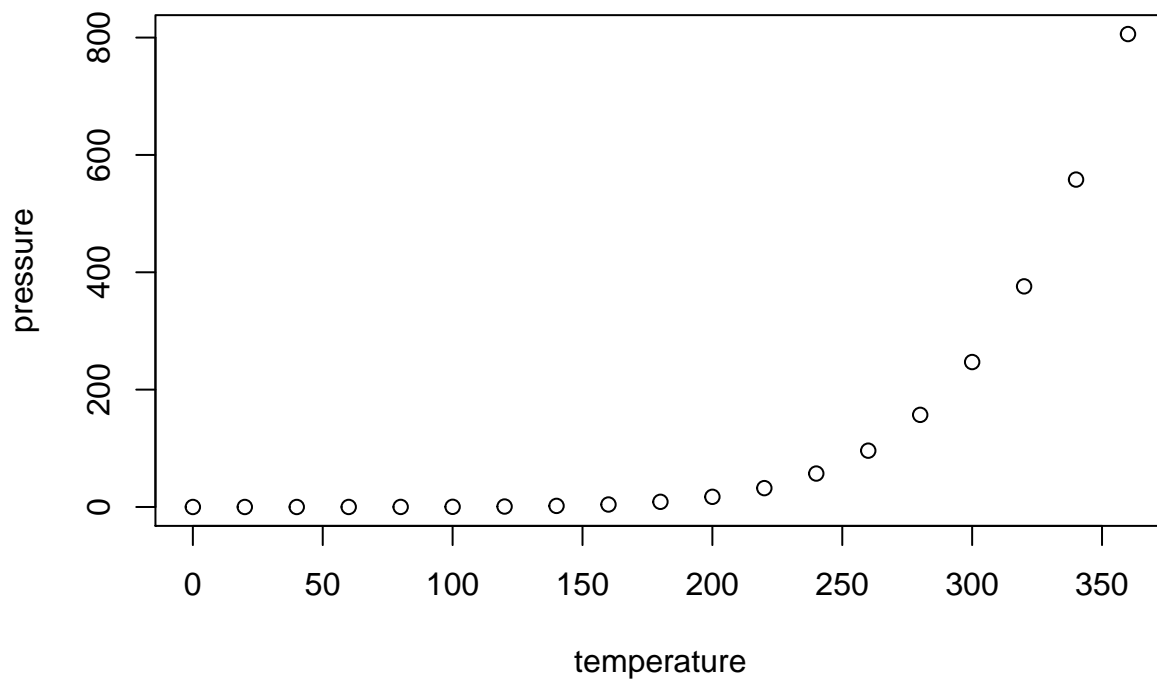
  posteriorTheta[i] <- rgamma(n = 1, shape = alphaStar, rate = betaStar )
}

hist(posteriorTheta)
```



Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.