06_Appendix

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Appendix

A Rough Sketch of the Implementation

Recall that the algorithm consists of three steps:

1. Initialization
2. The E-step
3. The M-step

```
for (i in 1:iterations){
   if (i = 1){
    # initialization
    # E-step:
    1. pass data & initial estimates from k-means to e_step and store as e_out
       return posterior probability & log-likelihood
    # M-step:
    2. pass the posterior probablity from e_out to m_step and store as m_out
       return estimates (e.g. μ, σ, π)
    # current log-likelihood
    3. store the log-likelihood from e_out to current log-likelihood
   } else {
    # E-step
    1. pass data & current estimates obtained from m_out to e_step and store as e_out
    # M-step
    2. pass the posterior probability from e_out to m_step and store as m_out
    # check
    3. calculate the difference between current log-likelihood & current + 1 log-likelihood
   if (convergence (i.e. change is minimal) ){
    break
   } else {
    1. set current + 1 log-likelihood to current log-likelihood
    2. repeat E-step and M-step
```

```
    }
    }
}
```