The Status Report

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- Distribution:
$$p(x|\theta) = \sum_k a_k \, p_k(x|z_k, \theta_k)$$

- Bayes' Theorem:
$$w_{ik} = p(z_k|x_i, \theta) = \frac{p_k(x_i|z_k, \theta_k) \, a_k}{\sum_m a_m \, p_m(x_i|z_m, \theta_m)}$$

- EM-Algorithm:

- Convergence:

$$\sum_i \log(p(x_i|\theta))$$

E-Step

w_{ik}

M-Step

$$a_k = \frac{\sum_i w_{ik}}{N} = \frac{N_k}{N}$$

$$\mu_k = \frac{\sum_i w_{ik} \, x_i}{N_k}$$

$$\Sigma_k = \frac{\sum_i w_{ik} (x_i - \mu_k)(x_i - \mu_k)^T}{N_k}$$

Silhouette Coefficient for Clustering on normalised data

Silhouette Coefficient for Clustering on PCA-transformed data