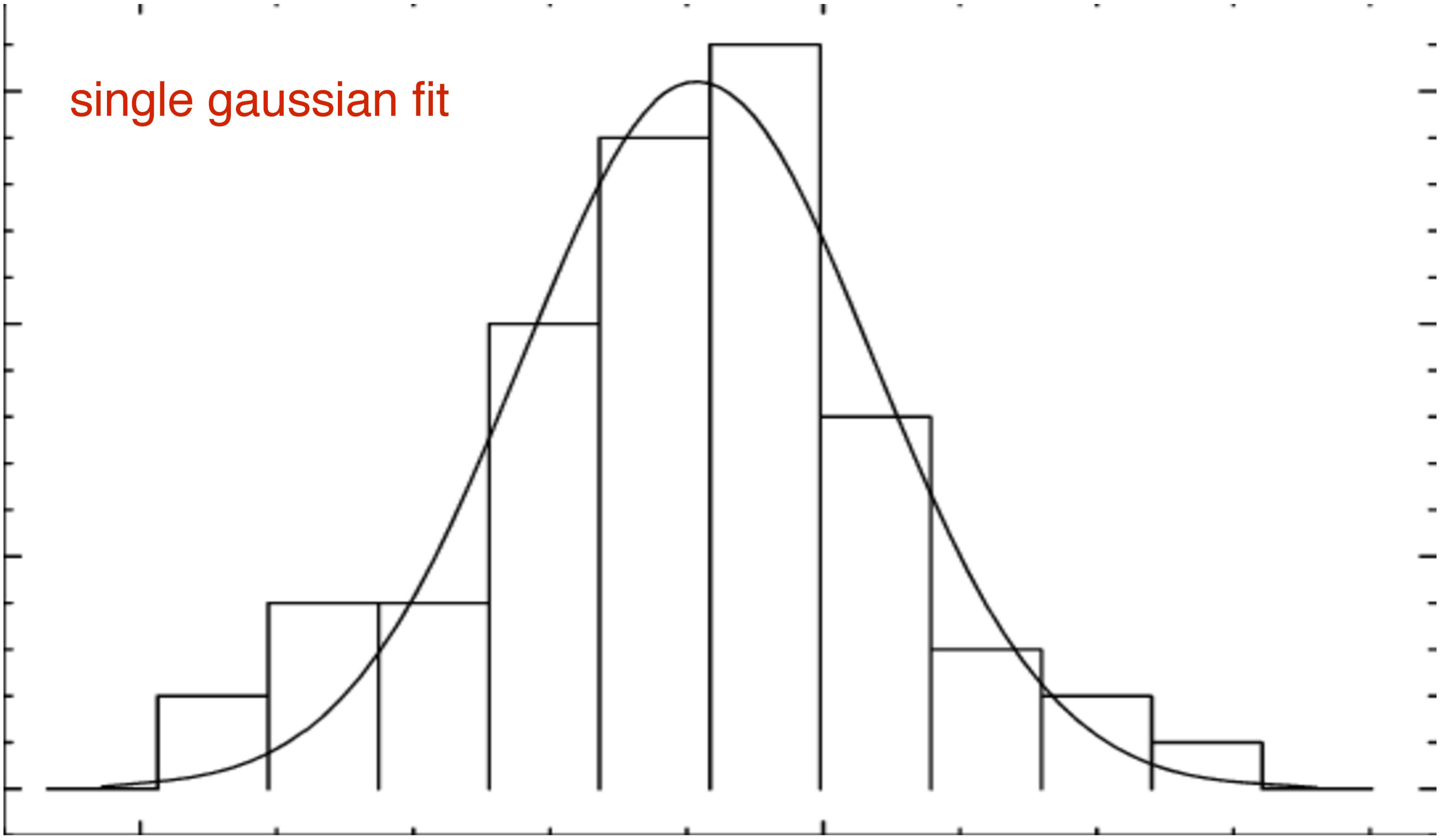
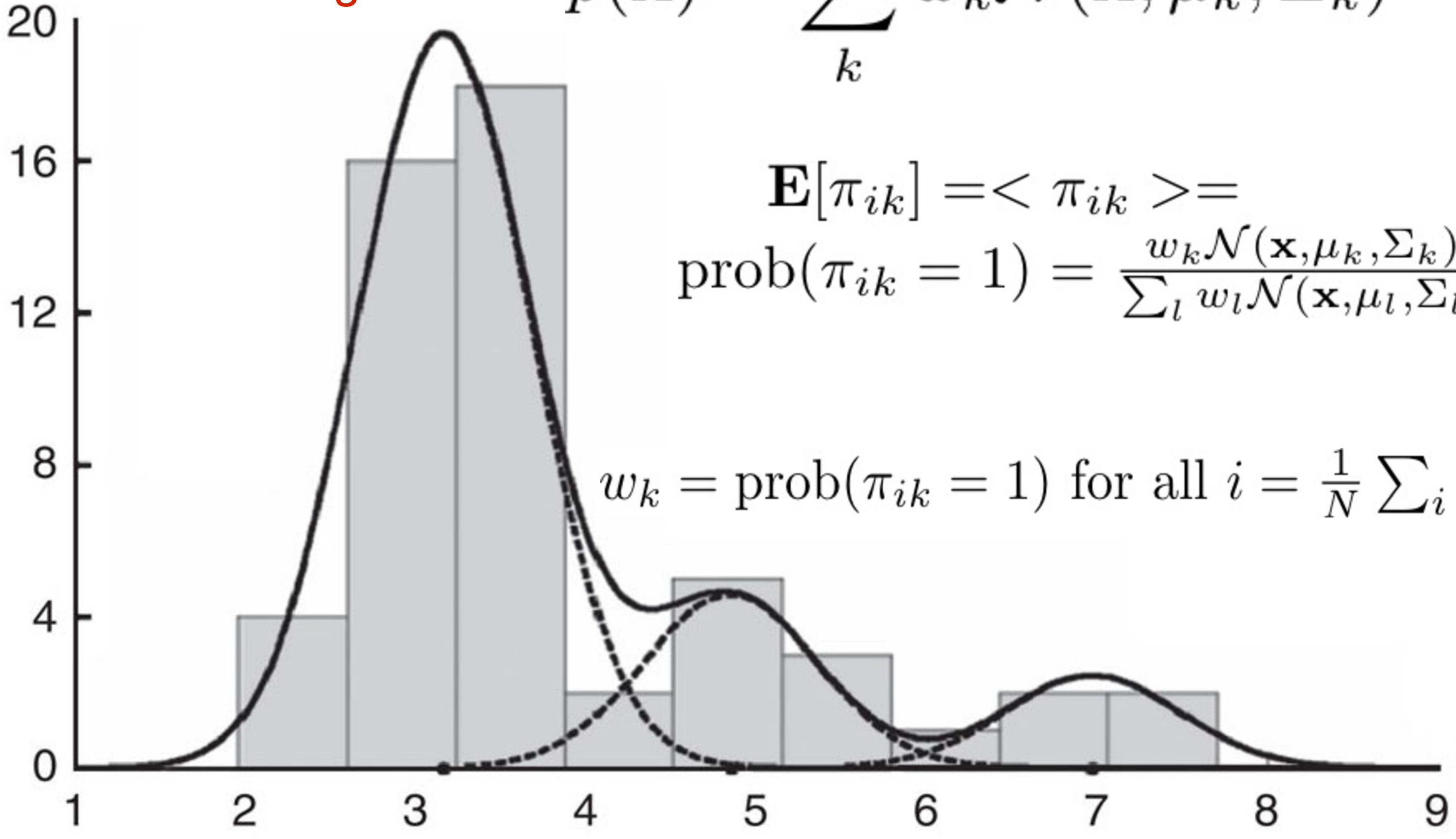


single gaussian fit

mixture of gaussians $p(\mathbf{x}) = \sum_k w_k \mathcal{N}(\mathbf{x}, \mu_k, \Sigma_k)$



$$\mathbf{E}[\pi_{ik}] =< \pi_{ik} >=$$

$$\text{prob}(\pi_{ik} = 1) = \frac{w_k \mathcal{N}(\mathbf{x},\mu_k,\Sigma_k)}{\sum_l w_l \mathcal{N}(\mathbf{x},\mu_l,\Sigma_l)}$$

$$w_k = \text{prob}(\pi_{ik} = 1) \text{ for all } i = \frac{1}{N}\sum_i \pi_{ik}$$