

Gaussian Mixtures

- A *Gaussian Mixture* is a function that is comprised of several Gaussians, each identified by $k \in \{1, \dots, K\}$, where K is the number of clusters of our dataset
- each cluster is modelled according to a different Gaussian distribution. This flexible and probabilistic approach to modelling the data means that rather than having hard assignments into clusters like k-means, we have soft assignments.
- Variational inference is an extension of expectation-maximization that maximizes a lower bound on model evidence (including priors) instead of data likelihood.

Query:

Gaussian Mixture Models or Gaussian Mixtures? Models are a part of the main topic but usually this topic is referred as Gaussian Mixture Models in research papers and in books.

Additional references to be used

Reynolds D. (2009) Gaussian Mixture Models. In: Li S.Z., Jain A. (eds) Encyclopedia of Biometrics. Springer, Boston, MA. https://doi.org/10.1007/978-0-387-73003-5_196

<https://towardsdatascience.com/gaussian-mixture-models-explained-6986aaf5a95#:~:text=A%20Gaussian%20Mixture%20is%20a,comprised%20of%20the%20following%20parameters%3A&text=A%20mixing%20probability%20%CF%80%20that,the%20Gaussian%20function%20will%20be.>

<https://scikit-learn.org/stable/modules/mixture.html>

<https://brilliant.org/wiki/gaussian-mixture-model/>