In 3) 1 If we have a prior distribution or parameter, then, we are trying to solve the problem

say,
$$F(q,0) = \sum_{x} qGx \log \left(P(qx | \theta) / qGu \right)$$

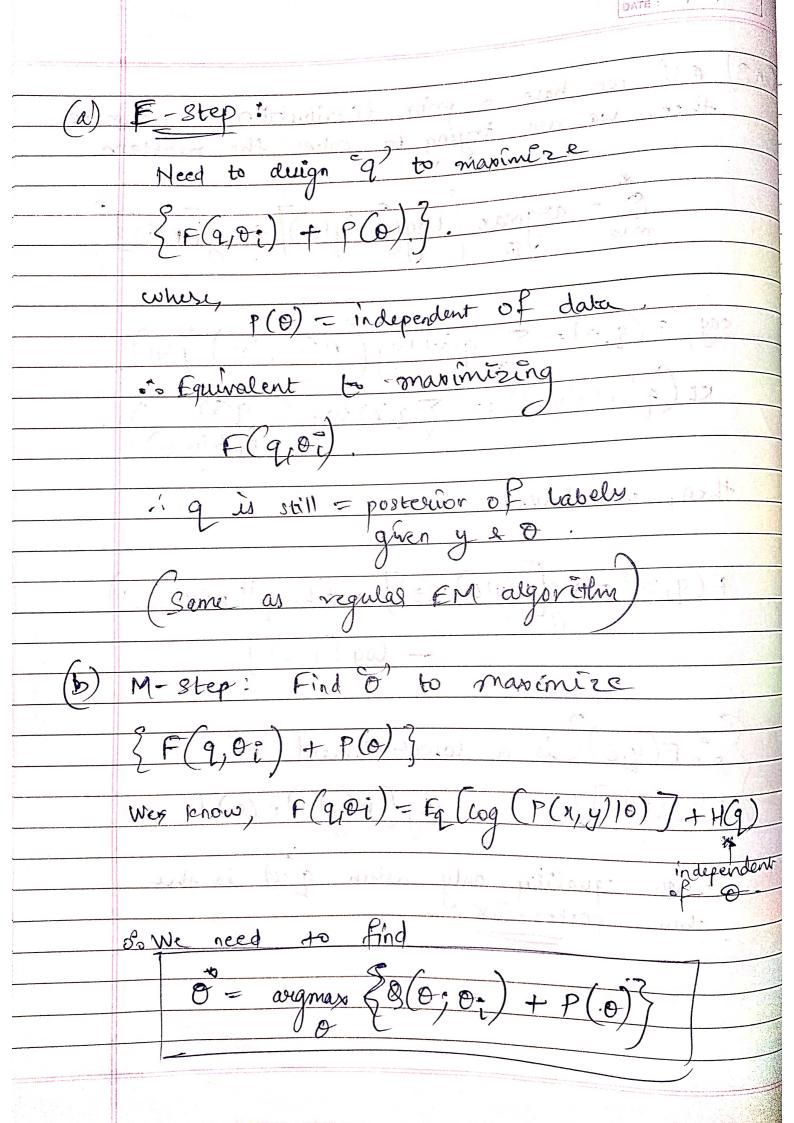
$$KL\left(\frac{q}{p(x|y,0)}\right) := \sum_{x} q(x) \log\left(\frac{q(x)}{p(x|y,0)}\right)$$

then, we have

$$F(q, \theta) = \log \left[P(y|\theta) P(\theta) \right] - KL(q|| p(x|y, \theta))$$

$$- \log \left[P(\varphi) \right]$$

true postelior.



c) (i) We are conjugate priors are prior for parameters of GMM.
Para and a series of Contra
Conjugate prior of a single gaussian is a product of gaussian density N and wishaut density W.
is a product of country N
and wishaut density W
Court of Court of
Also, conjugate prior of mixing probabilities is a Dirichitet density P.
is a Dirichilet density P.
stolle obtain,
The state of the s
p(o) = D(p(E) vr) TN(uc/vr, n; Er)
(05)
$\mathcal{N}\left(\mathbb{Z}_{k}^{-1} \mid \mathcal{A}_{k}, \mathcal{B}_{lo}\right)$
the second secon
where, D = Dinichilet density
N = Gransian densety
W = Wishart density
ii) If we use the above prior, the M-step updates obtained are as follows.
updates obtained are as focus.
N
$W_{k} = \hat{p}(k) = \sum_{k} p(k sv) + \gamma_{k} - 1$
5 (P C I)
$\sum_{k=1}^{\infty} \left(\sum_{k=1}^{\infty} P(k x^{2}) + \gamma_{k-1} \right)$

Référence: Conjugate Prior Penalized learning

PAGE NO. :

$$l_{\xi} = \sum_{n=1}^{N} p(k|x^n) \alpha^n + \eta_k v_k$$

And,

$$\frac{\sum}{k} = \sum_{n=1}^{\infty} (k | x^{n}) (x^{n} - \hat{u}_{k}) (x^{n} - \hat{u}_{k})$$

$$+ n_{k} (\hat{u}_{k} - v_{k}) (\hat{u}_{k} - v_{k}) + 2\beta k$$

N = p(k|gc) + 24, -d