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GMM distribution ?-

$$P(x,0) = \sum_{k=1}^{K} T_k N(x; u_k, \xi_k)$$

ETTO = 1 OCTRCI

Ex is a diagnal matrix

[0--1--0] (one not vector)

let P(zk=1) = Tk

$$P(z) = \prod_{k=1}^{K} (\prod_{k})^{Z_{k}}$$

P(X |Zk=1) = N(x; Mk, Ek)

 $(z) = \frac{1}{1} N(x, Uk, z_k)^{2k}$

Prior Probability = P(ZK=1) = Tk, P(Z) = TT The

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Pot	nor frob = P(zk=1/x) = P(x zk=1)P(zk=1)
OSITO	0108 1800 0 (CR-1/2C)
in the second	CERENTO -> (Bayes Thosen)
	P(ZK=1/X)= TKN(X, UK, EX)
	II N(X; Mi, Si)
	COLUMN 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10
	2 X (Zk)
	Y (Znk) = P(Zp=1/2n)
	2. TKN (InjUR, ER)
	Z The X (Y.) Les S-
	RZI IR / (ah) (y) Zy)
	2 (2(x20) = 2 log 2 The N(2m, Mk2 Ek)
lo.	g(x(x)0) $n=1$ $d[k=1]$
	N/2m' Ni Ei) Z 1 exp (x-Mk) =
	(21) d Z
1	
	as Zi is diagnot motors.
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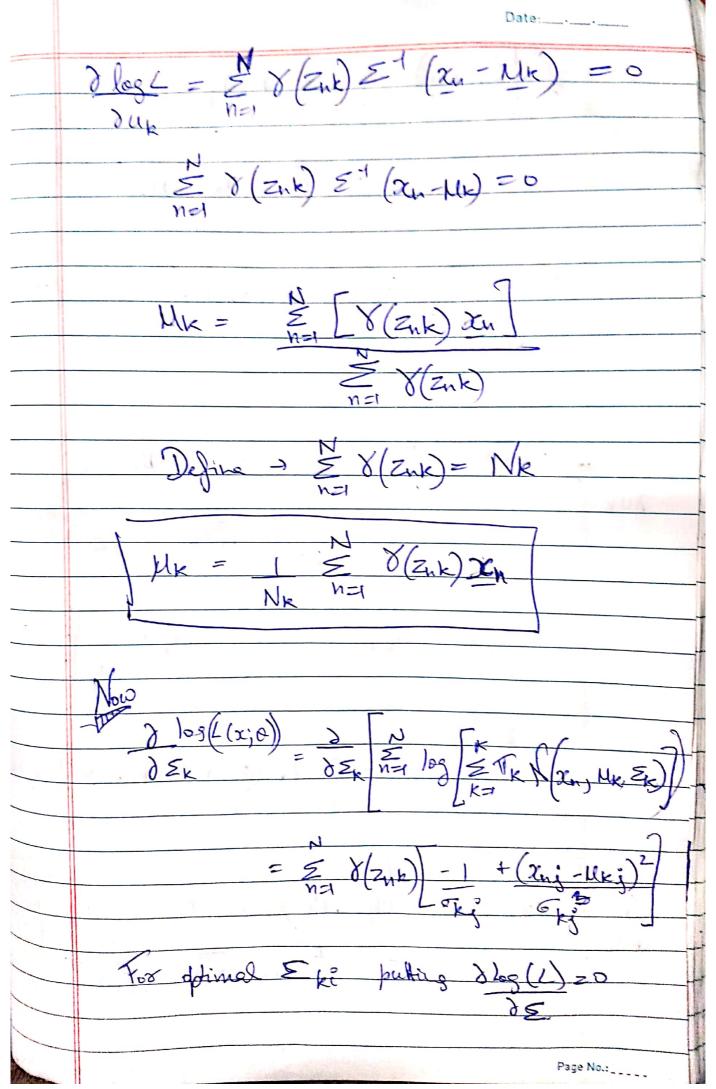
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$$\frac{1}{2} \int \frac{1}{2} \left(x_n - M_j \right)^{-1} \left(x_n - M_j \right)^{-1}$$

$$\frac{\partial}{\partial u_{k}} \log \left(2(\alpha; 0) \right) = \underbrace{\frac{\partial}{\partial u_{k}}}_{N=1} \underbrace{\frac{\partial}{\partial u_{k}}}_{N=1} \underbrace{\left(\operatorname{T}_{k} \operatorname{N} \left(2n_{j} \operatorname{\mathcal{U}}_{k}, \operatorname{\Sigma}_{k} \right) \right)}_{N=1}$$

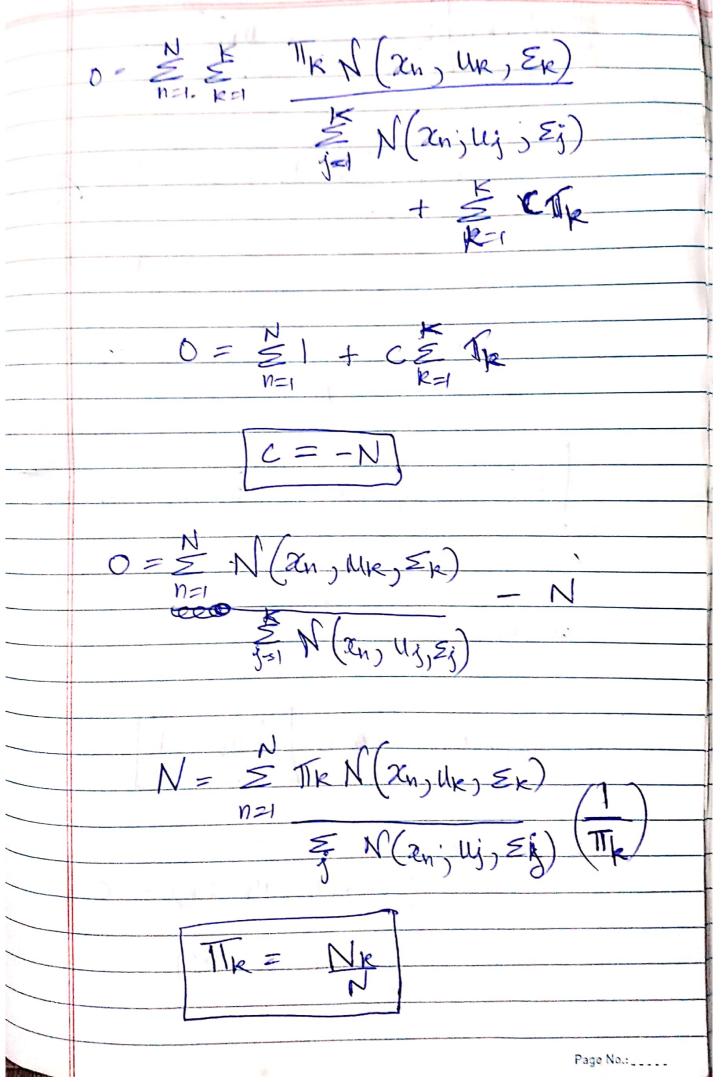
$$\frac{\partial \log(\mathcal{X}(x;0))}{\partial u_{k}} = \frac{\sum_{k=1}^{N} \prod_{i=1}^{N} N(x_{i}, u_{k}, \sum_{k})}{\sum_{i=1}^{N} N(x_{i}, u_{i}, \sum_{k})} = \frac{\sum_{i=1}^{N} N(x_{i}, u_{i}, \sum_{k})}{\sum_{i=1}^{N} N(x_{i}, u_{i}, \sum_{k})}$$

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12 d (2nk)) [-) + (Xnj	-unj)2 = 0
= N=1	8(2nk) (xnj-M	$\frac{kj^2}{z} = \frac{N}{Nn} \left(\frac{N(2nk)}{nn} \right)$
	Skj ² Z J Nk	N \ \(\frac{2nk}{n=1} \left(\frac{2nk}{2nk} \left(\frac{2nj}{2nj} - \frac{4kj}{2} \right)^2}
\\ \begin{align*} \begin{align*} \left\[\align*_{\text{k}} \\ \end{align*}	= J E Y (xx Nx n=1	16) (2n-14) (2n-14)
we kn	ow that E	TR = 1
10g(4(=		ETK-1 R=1
which		MR, ER) + C
	JE1 N (-Au	nj llý, Zý)
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HWO X E R dxN, each sow has a yest most Lets assume there is a matrix PERdxd Such that Y=PX gives diagnol covariance matrix ic $C_{YY} = \int_{N} (P_{X}) (P_{X})^{T}$ is diagnol = IPXXTPT $XX^T = GX$ Cxx = IPCxx PT Since Cxx is Symmetric , we can write $Cxx = EDE^{T} - (2)$ Dis diagnot metrix and E is orthogonal metrix EET=T C+x = I PEDETPT

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	$illet = E^T$
	Cyy = D
10-	V= ETV ascas us abbigual
- /	hence I to gives us optimed
	hence Y= ETX gives us optimal decorrelated from of data contained en X.
	en X.
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