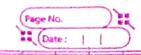


= max (-1 et Dijkeijk) + log (WKMK)
K (2 eijk Dijkeijk) + log (WKMK)



- log P(ZIX) = min 1 elix Slix elix - log (wx Mx) K 2 elix Slix elix

* Integration

=> With the max mixture formulation, the log likelihood again onesals in local quadratic forms.

=> Ecos to integrate in the optimizer:

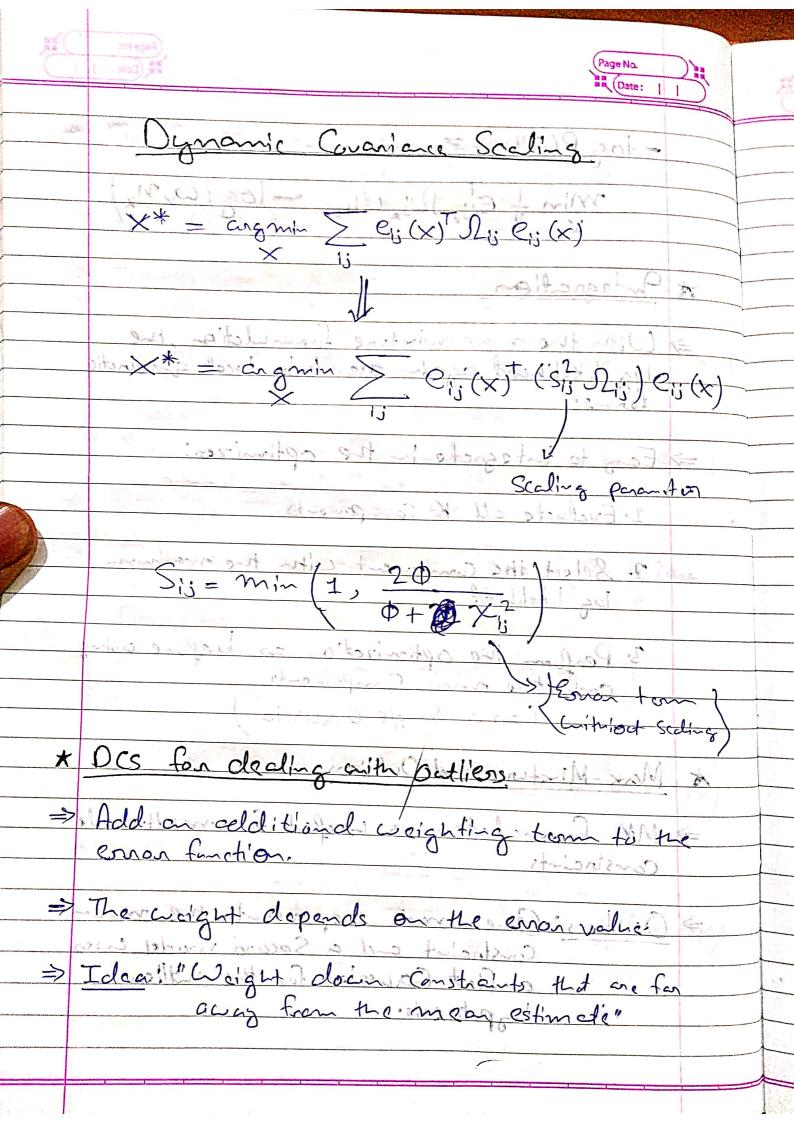
- 1. Evalude all K Components
- 2. Select the component with the maximum log likelihood
- 3. Perform the optimization as before using only the max compensats

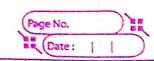
 (as a Single Gaussian)

* Max-Mixture and Outliers aloss of 200 x

=> MM formulation is useful for multimodel
constraints

Sutliers: One made proposents the main Surstnaint and a Second model uses a flat Gaussian for the outlier hypothesis.





Least	Square	with	Robert	Kennels

* Optimizing with Outliers

-> Assuming a Gaussian error in the constraints is not clevery orealistic.

Large emos are problemais.

* Robert M-Estimators

=> f(e) function would to define the PDF.

 $P(e) = e \times p(-f(e))$

- Minimizing the mag. log likelihoud

x = angmi- > f(e; (x))

* Different Rho Functions

f(e) = e2 [Gaussian]

f(e) = let { 11 nom}

=> Muber M-estimator

 $f(e) = \int_{-\infty}^{\infty} \frac{e^2}{1} \qquad \text{if } |e| < 0$ $C(|e| - \frac{c}{2}) \qquad \text{otherwise}$

= Gradient at aptimum good to Zu.

 $\frac{S\left(f(e;(\kappa))\right)}{S\times} = f'(e(\kappa))\frac{Se;(\kappa)}{S\times} = 0$

> For weighted loost square:

Set the Cheight using the Kennel as:

$$\omega_{i} = \frac{1}{e_{i}(x)} \beta'(e_{i}(x))$$

$$= \frac{1}{e_{i}(x)} \beta'(e_{i}$$

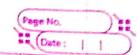
Generalized Robert Kemels (2019)

$$f(e, \alpha, c) = \frac{|\alpha - 2|}{\alpha} \left(\frac{(e/c)^2}{|\alpha - 2|} + 1 \right) - 1$$

By changing the & you are chasin the shape of the loss function.

* Adoptive Robert Loss Function

Q = 100/08 - (100/08/2 - (100/08/2) S



=> Office a Probability distribution for the
general loss function

$$P(e, \alpha, c) = \frac{1}{cZ(\alpha)}e^{-f(e, \alpha, c)}$$

$$Z(x) = \int e^{-\beta(e,x,1)} de$$

=) Adaptive loss function defined by:

=> Z(d) approaches 00 for negative .

⇒ We car limit the sange of outliers to mai-tain a Pdf.

$$Z(\alpha) = \int_{-\gamma}^{\gamma} e^{-\beta(e,\alpha,1)} de$$

=> Poublems in practice:

> New Jacobias med to be computed.

for Complex problem

Sensitive to Initial ques

