??a, bx, yX, YX, Y
R^n nR
M
(S, g) $SgSS_d^+S$
S_d^+ $d \times d$
$S_d^+(k)$ $kd \times d$
S_d $d \times d$
$St(n, k)$ $n \times k$
$St^*(n, k)n \times k$
$Gr(n, k)$ $R^n k$
$\log(\cdot)$ $\log$
$\exp(\cdot)$ $\exp$
Log Log
Exp Exp
R
T
$T_X M$ $MXMTMM$
??
?
!
$_{\imath}rack.pngEXAMP02 : Multi - viewETH80[?][width =]source/ETH80_{a}pple.pngEXAMP03 : CMUMoBo[?][width =$
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?????
$\{x_{ij} \in$
$R^l\}_{j=1}^{n_i} in_i$
$\bar{x}_i =$
$\frac{1}{n_i} \sum_{i=1}^{n_i} x_{ij} C_i =$
$\frac{1}{n_i - 1} \sum_{j=1}^{n_i} (x_{ij} -$
$\bar{x}_i)(x_{ij} -$
$\bar{x}_j)^T$
$C_i =$
$U_i \Lambda_i U_i^T m(m <$
$l)$
$Y_i =$
$U_i(:$
$, 1 :$
$m)U_i(:$
$, 1 :$
$m)U_i m$
$\{Y_j\}_{j=1}^n$

$$\cos\theta_k = \max_{u_k \in span(Y_i)} \max_{v_k \in span(Y_j)} u_k^T v_k s.t u_k^T u_k = 1, v_k^T v_k = 1 u_k^T u_i = 0, v_k^T v_i = 0, (i = 1, 2, ..., k-1) \quad (1)$$

??
$_{a}ngle.png[][?]$
$d_p(Y_i, Y_j) =$
$\left(\sum_{i=1}^m \sin^2\theta_i\right)^{\frac{1}{2}}$
$d_{Max}(Y_i, Y_j) =$
$\left(1 - \cos^2\theta_1\right)^{\frac{1}{2}}$
$d_{Min}(Y_i, Y_j) =$
$\left(1 - \cos^2\theta_m\right)^{\frac{1}{2}}$
$d_{CF}(Y_i, Y_j) =$
$2\left(\sum_{i=1}^m \sin^2(\theta_i/2)\right)^{\frac{1}{2}}$
?
????
$M?S_1, S_2, S_3, S_4, ...MS, S_i, C_j$
$d_{ppd}(x, y) =$
$\|x -$
$y\|$
$d_{psd}(x, S) =$
$\min_{x' \in S} \|x -$
$x'\|$
$d_{ssd}(S_1, S_2) =$
$anyvalidsubspacemetric$
$d_{pmd}(x, M) =$
$\min_{C_j \in M} d_{psd}(x, C_i)$
$d_{smd}(S, M) =$
$\min_{C_i \in M} d_{ssd}(S, C_i)$