

$$\begin{array}{ll} ??a,bx,yX,YX,Y & \\ R^n & nR \\ M & \\ (S,g) & SgSS_d^+S \\ S_d^+ & d\times d \\ S_d^+(k) & kd\times d \\ S_d & d\times d \\ St(n,k) & n\times k \\ St^*(n,k) & n\times k \\ Gr(n,k) & R^nk \\ \log(\cdot) & \log \\ \exp(\cdot) & \exp \\ Log & Log \\ Exp & Exp \end{array}$$

$$\begin{array}{ll} R & \\ T_XM & MXMTMM \end{array}$$

$$\begin{array}{ll} ?? & \\ \text{track.png}EXAMP02:Multi-viewETH80[?][width=]source/ETH80apple.pngEXAMP03:CMUMoBo[?][width=] & \\ ?? & \end{array}$$

$$\begin{array}{l} ? \\ ? \\ ?? \\ ? \\ ?? \\ ? \\ ? \\ ? \\ ? \\ ? \\ ?? \\ ??? \\ ???? \\ \{x_{ij}\in \\ R^l\}_{j=1}^{n_i}in_i \\ \bar{x}_i= \\ \frac{1}{n_i}\sum_{i=1}^{n_i}x_{ij}C_i= \\ \frac{1}{n_i-1}\sum_{j=1}^{n_i}(x_{ij}- \\ \bar{x}_i)(x_{ij}- \\ \bar{x}_i)^T \\ C_i= \\ U_i\Lambda_iU_i^Tm(m< \\ l) \\ Y_i= \\ U_i(: \\ ,1: \\ m)U_i(: \\ ,1: \\ m)U_im \\ \{Y_j\}_{j=1}^n \end{array}$$

$$\cos\theta_k=\max_{u_k\in span(Y_i)}\max_{v_k\in span(Y_j)}u_k^Tv_k s.t.u_k^Tu_k=1,v_k^Tv_k=1u_k^Tu_i=0,v_k^Tv_i=0,(i=1,2,...,k-1)$$

(1)

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