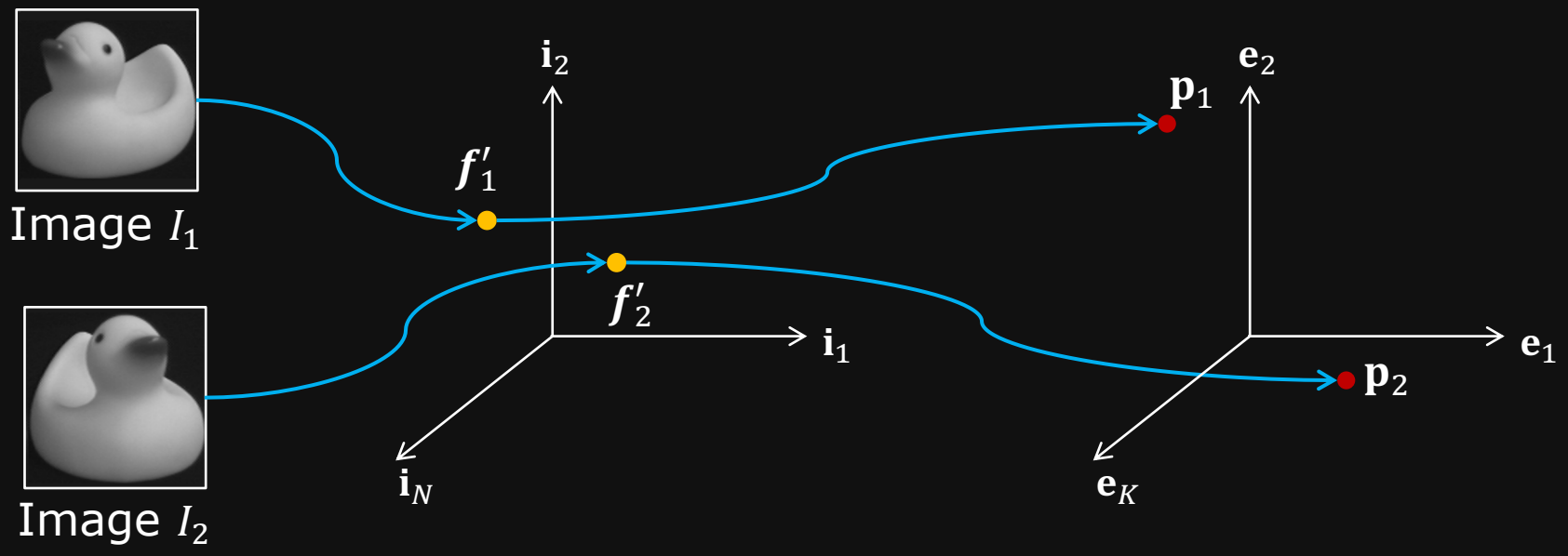
Correlation and Distance in Eigenspace



Correlation in Image Space

$$SSD = \sum_p \sum_q (I_1[p,q] - I_2[p,q])^2$$

$$= \|\boldsymbol{f}'_1 - \boldsymbol{f}'_2\|^2$$

Square of L^2 Distance in K-D

$$d^2 = \|\mathbf{p}_1 - \mathbf{p}_2\|^2$$

$$= \left\| \sum_{k=1}^{K} p_k^{(1)} \mathbf{e}_k - \sum_{k=1}^{K} p_k^{(2)} \mathbf{e}_k \right\|^2$$

$$\approx \|\boldsymbol{f}'_1 - \boldsymbol{f}'_2\|^2$$