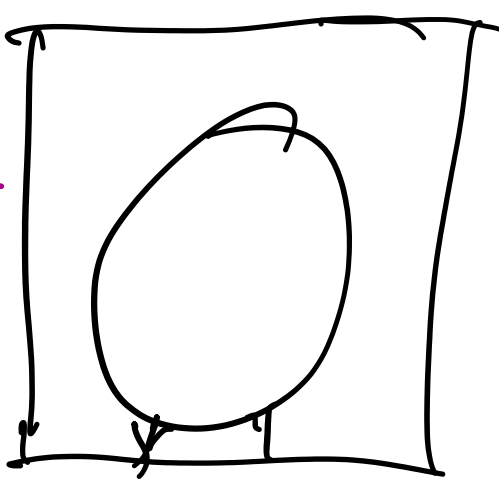
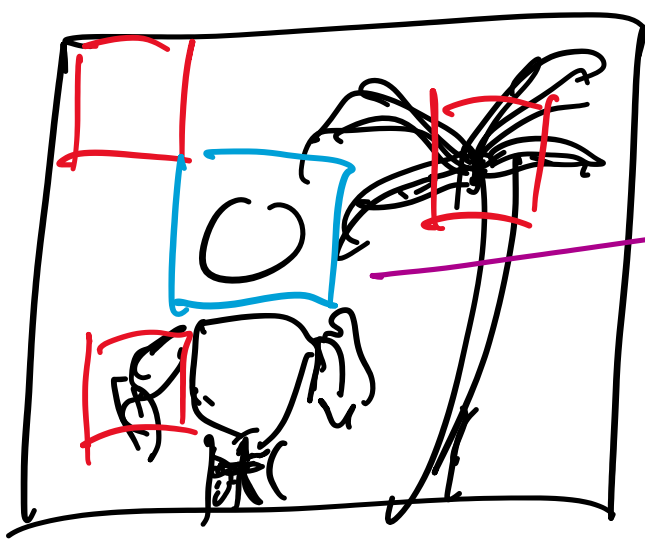


Loss in image classification

• face or not face

• Ada or Charles or ?

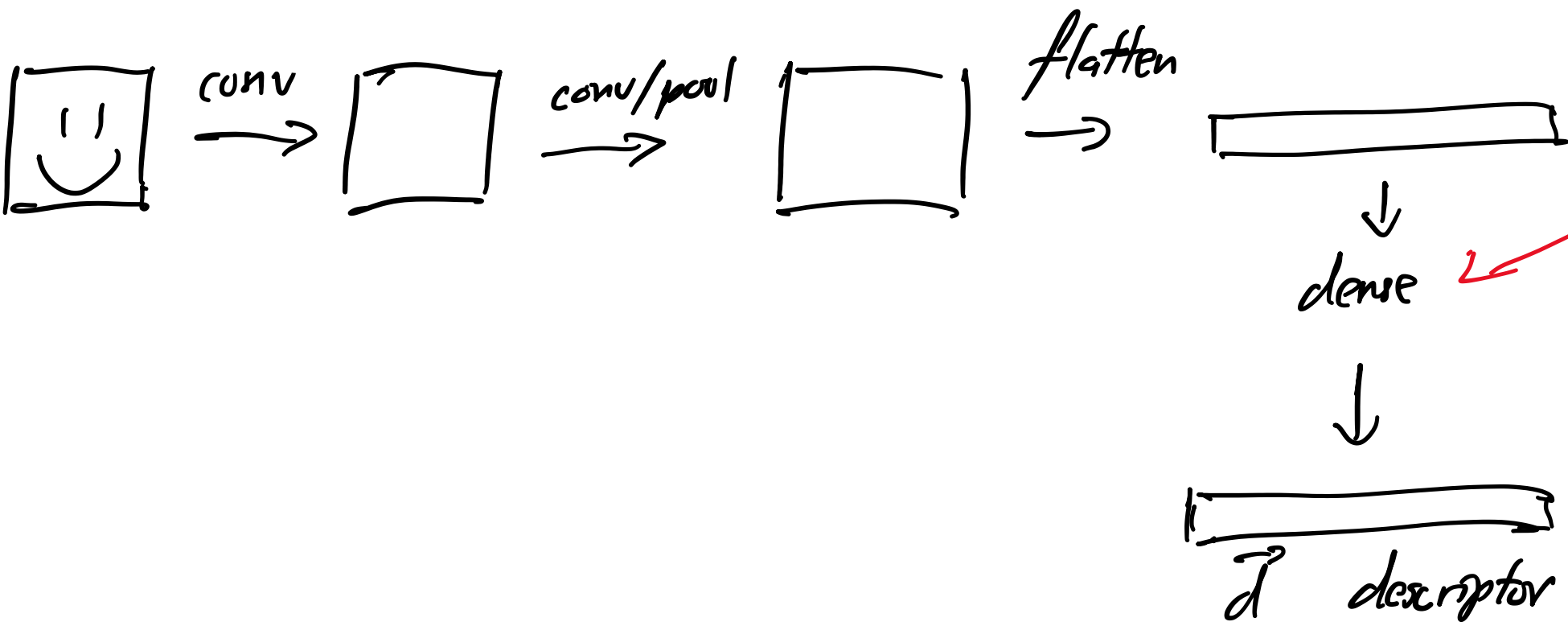
$L_{\text{cross-entropy}}(p_{\text{face}}^{(\text{pred})}, p_{\text{face}}^{(\text{true})})$



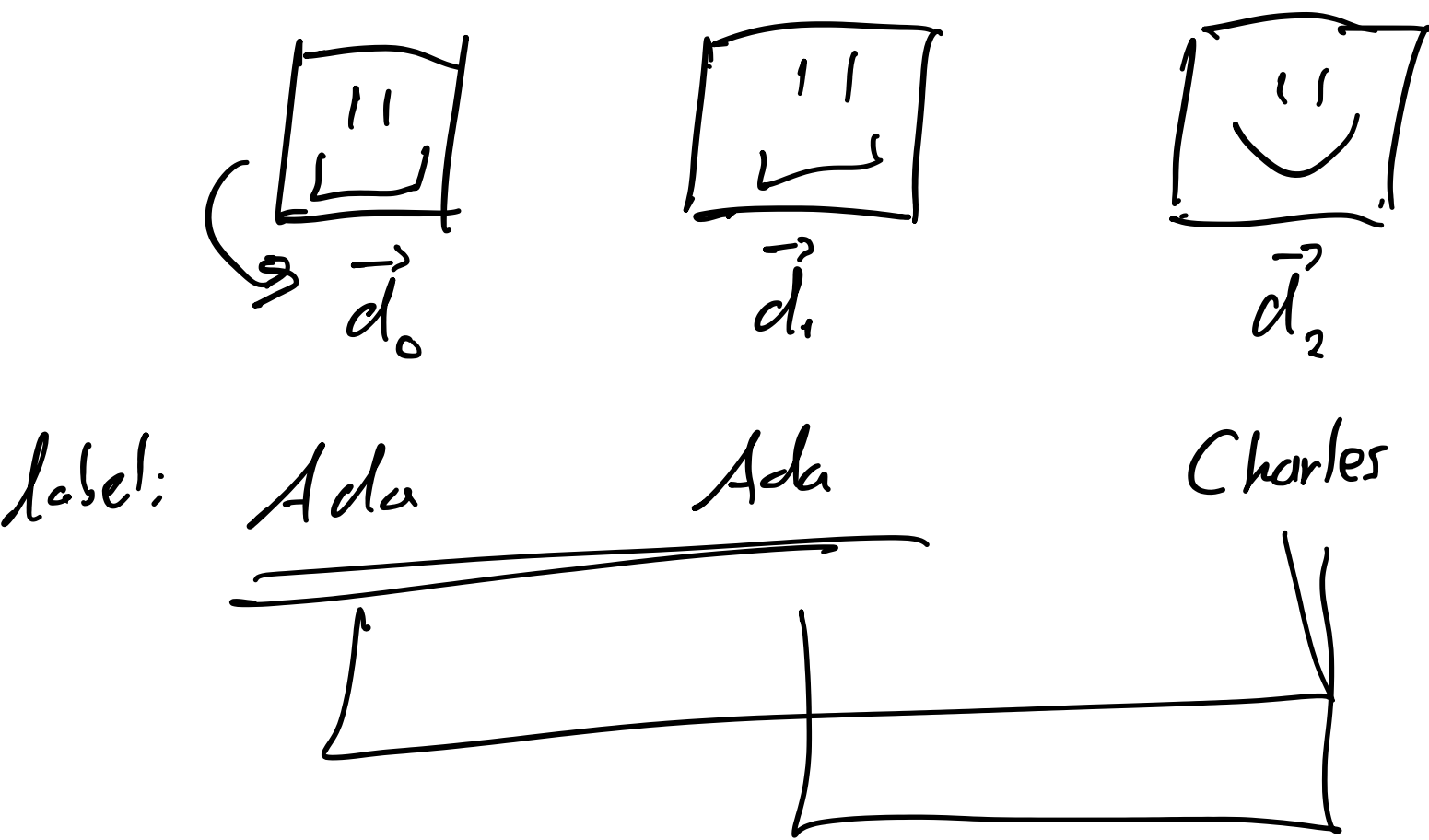
extraction, standardize size

Face Descriptors

↑
vector



feed-forward / fully-connected /
"standard" NN

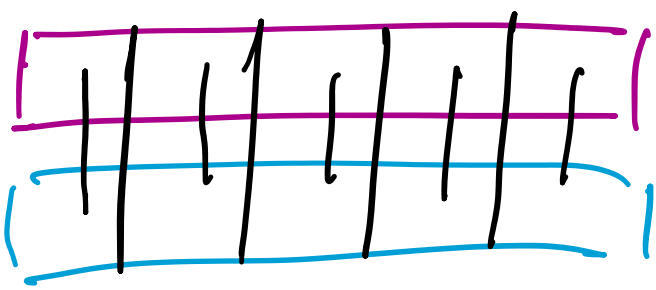
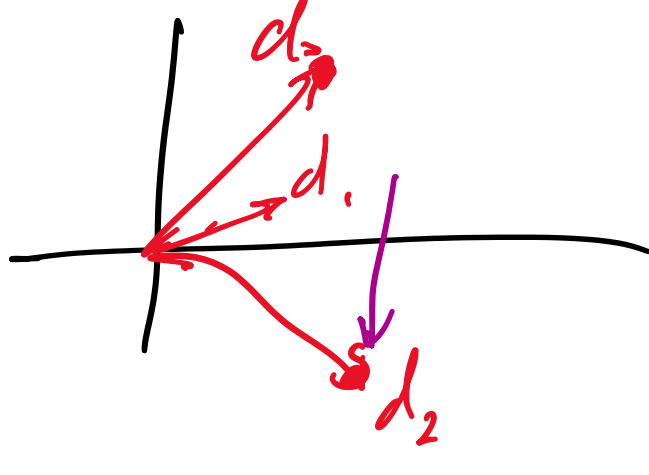
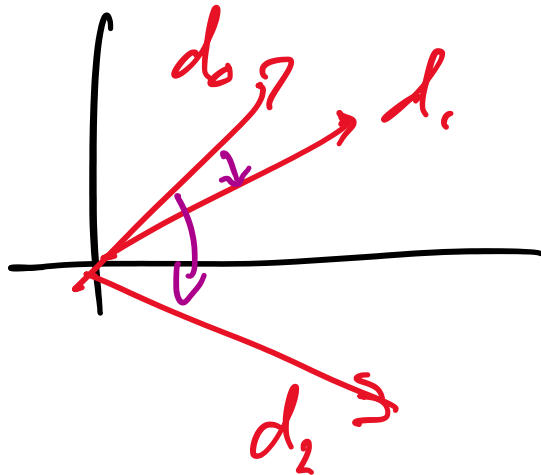


triplet loss

$\vec{d}_0 \cdot \vec{d}_1 = \vec{d}_0 \cdot \vec{d}_2$
 $\vec{d}_0 \cdot \vec{d}_1 > \vec{d}_1 \cdot \vec{d}_2$

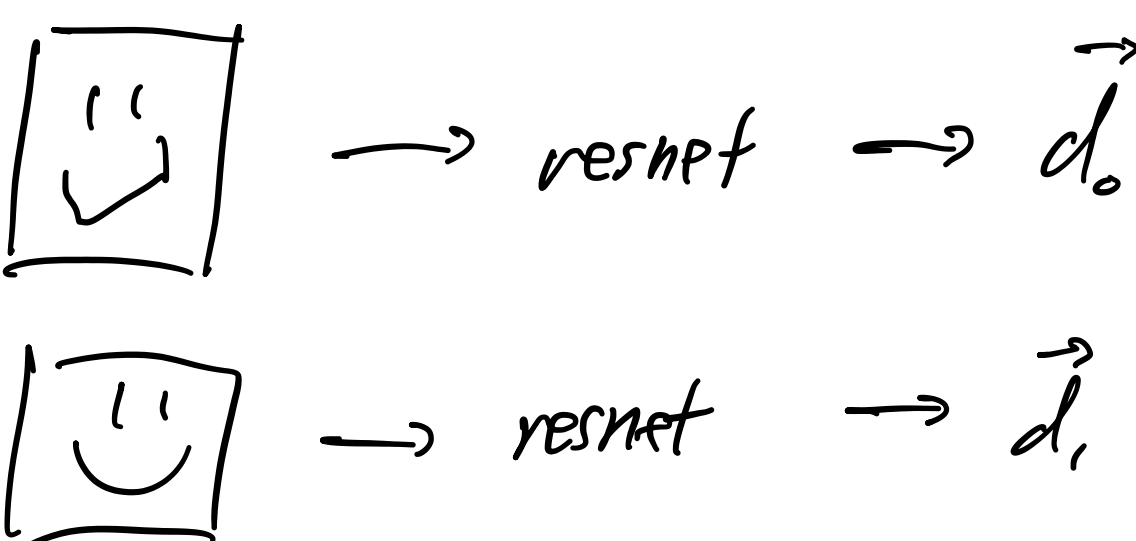
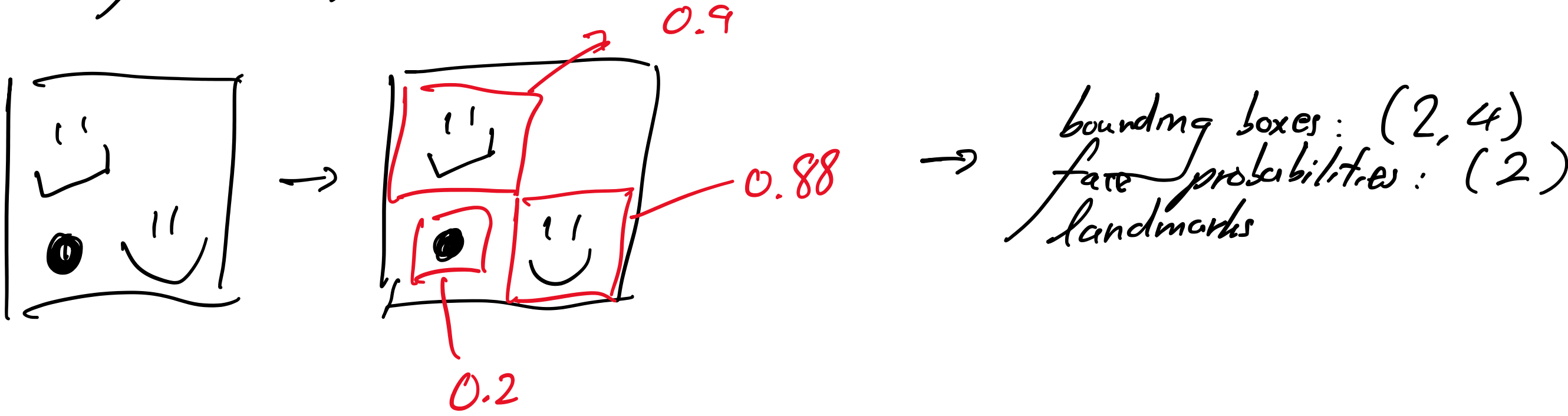
geometric:

$\cos(\vec{d}_0, \vec{d}_1) > \cos(\vec{d}_0, \vec{d}_2)$



facenet

- 1. face detection: multi-task cascaded convnet (MTCNN)
- 2. face description: ResNet

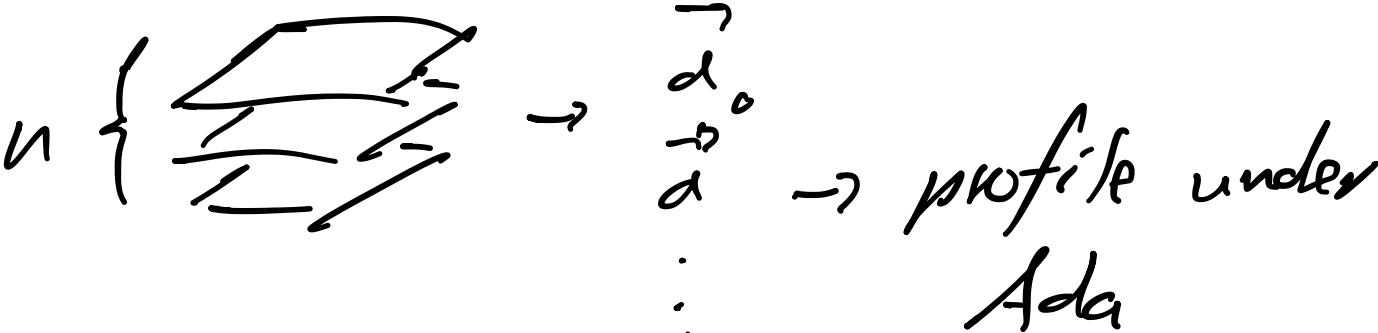


Capstone

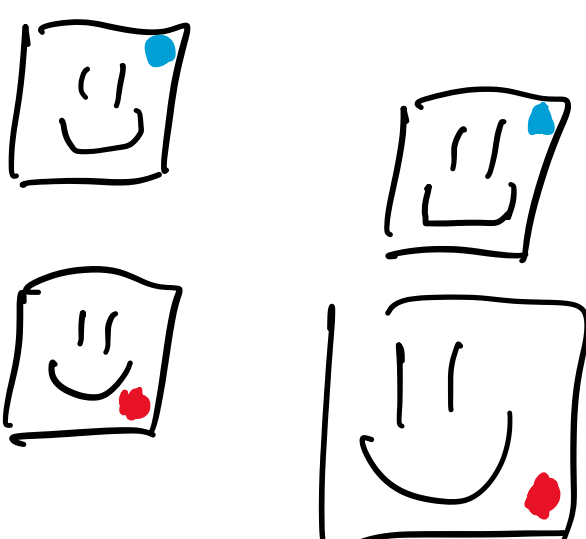
faceID: database
name → profiles

- name
- descriptors for person
[$\vec{d}_0, \vec{d}_1, \vec{d}_2, \dots$]

pictures of Ada



face clustering:



← clustering algorithm:
Chinese Whispers