

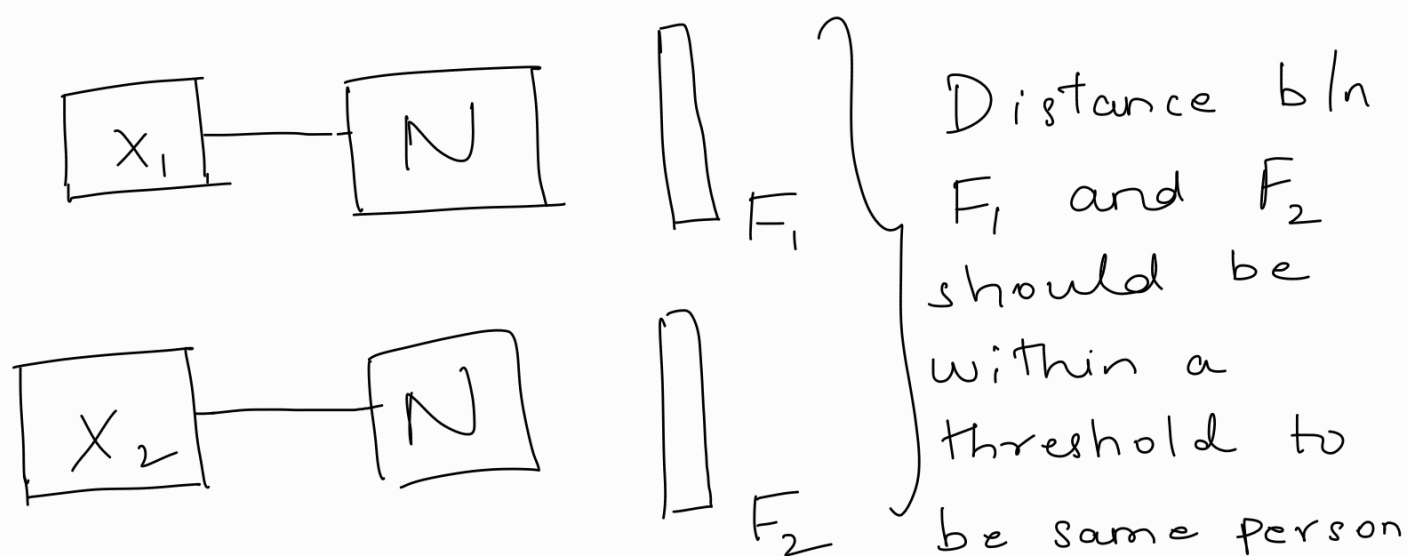
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Catastrophic forgetting

CNNs forget earlier classes very fast in case of fine tuning for new classes.

Identification

Given 2 faces, figure out if they belong to same person.



Positive pair: $y=1$ ($X_1=X_2$)

Negative pair: $y=0$ ($X_1 \neq X_2$)

distance (d) $<$ margin (m) no penalty

$d > m$ penalty

$$d^2 = (f_1 - f_2)^2$$

$$\text{Loss} = y d^2 + (1-y) [\max(0, m - d^2)]$$

Siamese network does not recognize faces.
It only verifies.

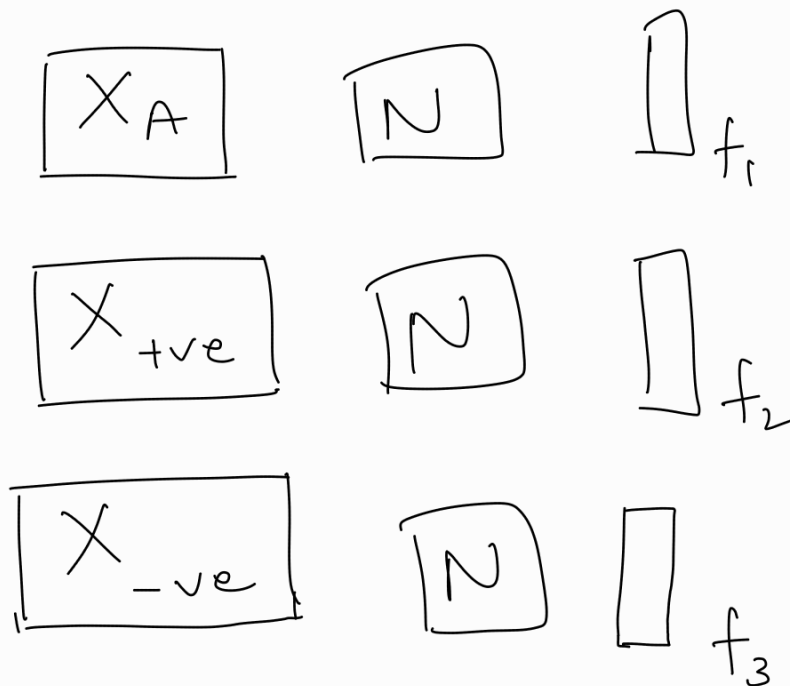
- 1] Take any dataset of human faces. Train on these. Put 2 photos of same person as positive pair. Don't backprop for -ve pairs. Precompute the features and store.
- 2] When a test person comes, pass his face through one forward pass and compute shortest distance with precomputed features. If distance $<$ margin, allow the person.

Will this network be fooled by photos?

→ Train a 2 class classifier to check if given input is photo or real. Only if person is real, proceed to siamese.

Another Loss Function

Use 3 inputs



$\text{dist}(f_1, f_3)$ should be more than
a margin over $\text{dist}(f_1, f_2)$

Triplet Loss Function

