



deeplearning.ai

Face recognition

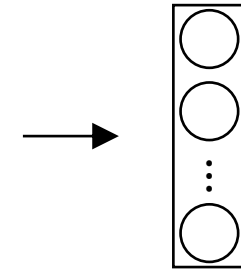
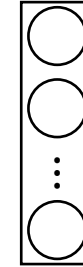
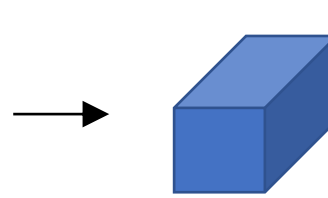
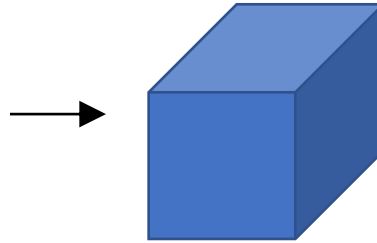
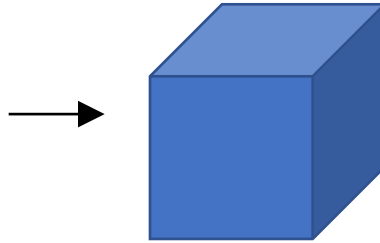
Siamese network

Siamese network

objective
(calculating "d")



$x^{(1)}$

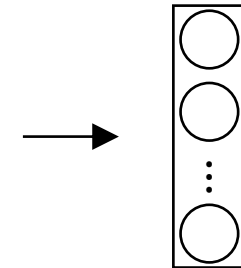
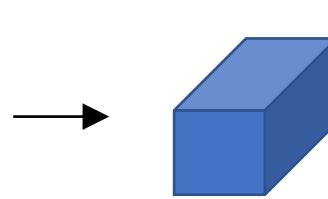
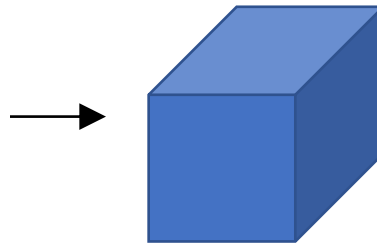
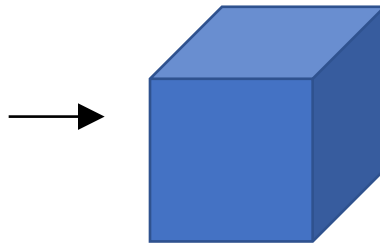


*Let's say the
o/p of the NN
is $f(x^{(1)})$, which
is a (128×1)
vector represent-
ing some
"encoding" of
the Image $x^{(1)}$*

$f(x^{(1)})$



$x^{(2)}$

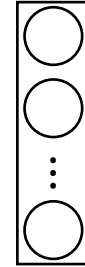
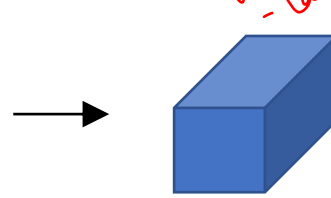
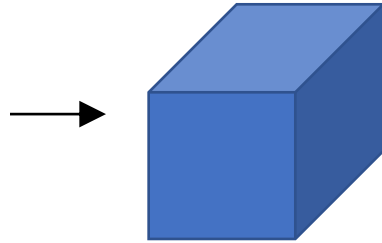
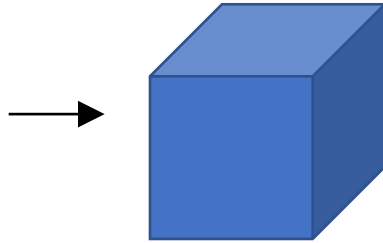


128×1
 $f(x^{(2)})$

*Basically, we want to check
similarity score b/w $f(x^{(1)})$ and
 $f(x^{(2)})$ to decide how "similar"
they are
 \Rightarrow we want to find the
distance!*

*This is
similar to
the concept
of word
embeddings*

Goal of learning



$f(x^{(1)})$

As we vary the params in the NN layers, we get different encodings & then we choose that NN w/ parameters fixed that gives us

- small value if we feed the NN diff Images of the same person & calc. dist b/w Images encoding
- large value if we feed the NN diff Images of diff people & calc. dist b/w their encoding

Parameters of NN define an encoding $f(x^{(i)})$

Learn parameters so that: → W, b

If $x^{(i)}, x^{(j)}$ are the same person, $\|f(x^{(i)}) - f(x^{(j)})\|^2$ is small.

If $x^{(i)}, x^{(j)}$ are different persons, $\|f(x^{(i)}) - f(x^{(j)})\|^2$ is large.

→ L_2 Norm

distance b/w encodings to be small if they are the same person - large, if they are diff

Google Siamese network paper (DeepFace)