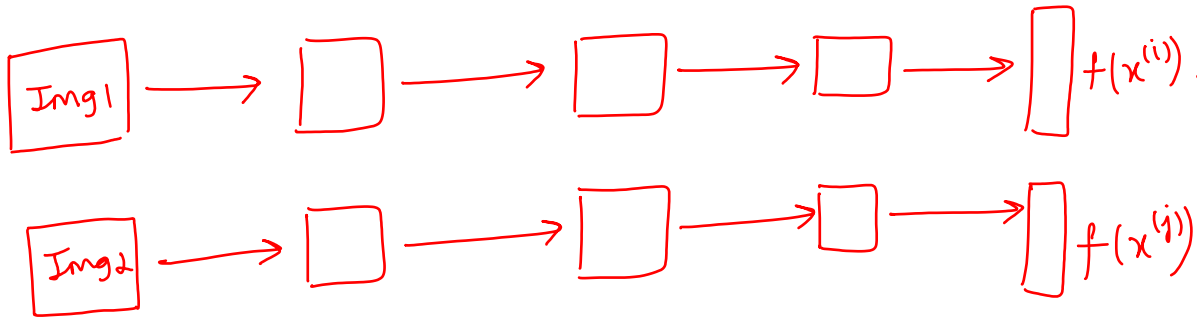
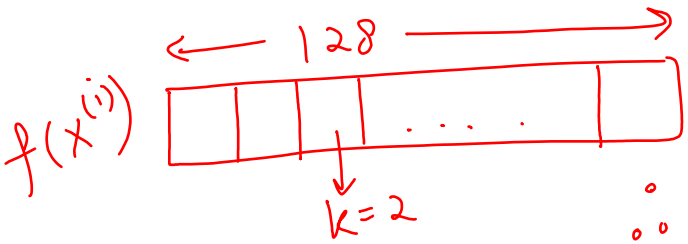
Face Recognition using Binary classification (Alternative to triplet loss)



For the logistic Regression layer we take the "difference in encodings" as the feature to the logistic Regression

$$\hat{y} = \sigma\left(\sum_{k=1}^{128} w_i \left| f(x^{(i)})_k - f(x^{(j)})_k \right| + b\right)$$

Here $f(x^{(i)})$ = encoding of image $x^{(i)}$



$f(x^{(i)})_k$ = k^{th} out of 128 vector value from the encoding of $(x^{(i)})$

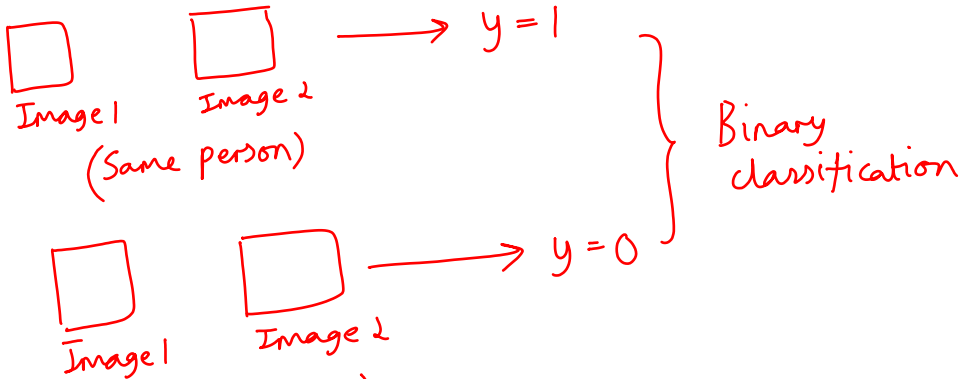
∴ we do point wise difference of the 2 values take the absolute value of the difference this absolute value = k^{th} feature of our logistic Regression

Another way to get the feature chi-sq. similarity $\left(\frac{(f(x^{(i)})_k - f(x^{(j)})_k)^2}{f(x^{(i)})_k + f(x^{(j)})_k}\right)$

Computational Trick to Make Deployment better

- Precompute the $f(x)$ values for all the employees so that if new employee walks in, then hopefully his/her Image's $f(x)$ will be very close to the $f(x)$ found in the database (of his own previous Image) & ∴ he will be able to walk through the door quickly
- If a Random person (not an employee) walks in, then his $f(x)$ will not match Any of the $f(x)$ in the database ∴ the difference will be large ⇒ he wont be let through

Summary



- Trained on siamese network with encodings $f(x)$ as output