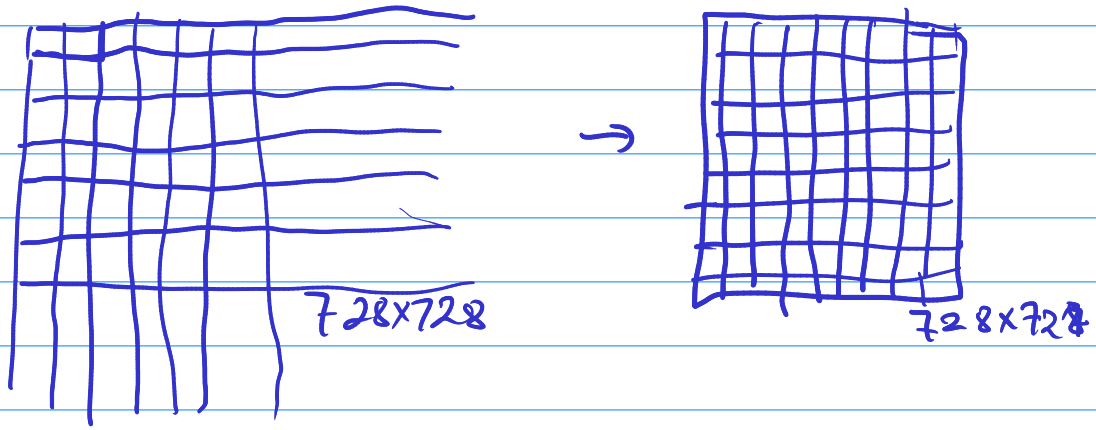


in an ANN

if we have an i/p matrix of 200x200 layer and a hidden layer of 200x200

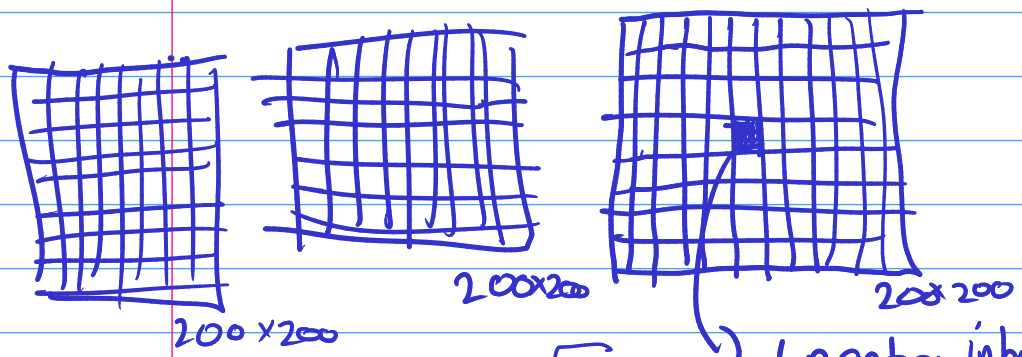
Weight matrix: $(200 \times 200) \times (200 \times 200)$

for a fully connected network

Since we're accounting for the dependency of every pixel

But

When we're discussing something like edge detection we dont need anything aside from the neighbouring pixels



We get an input here

for that, we need to multiply the 200x200 => 40000x1, with the let's say the column of the saved pixel

So we just need the neighbouring points to have some weights & rest all zero

Since there are a LOT of weights that are zero, we dont need so much

So we can just