

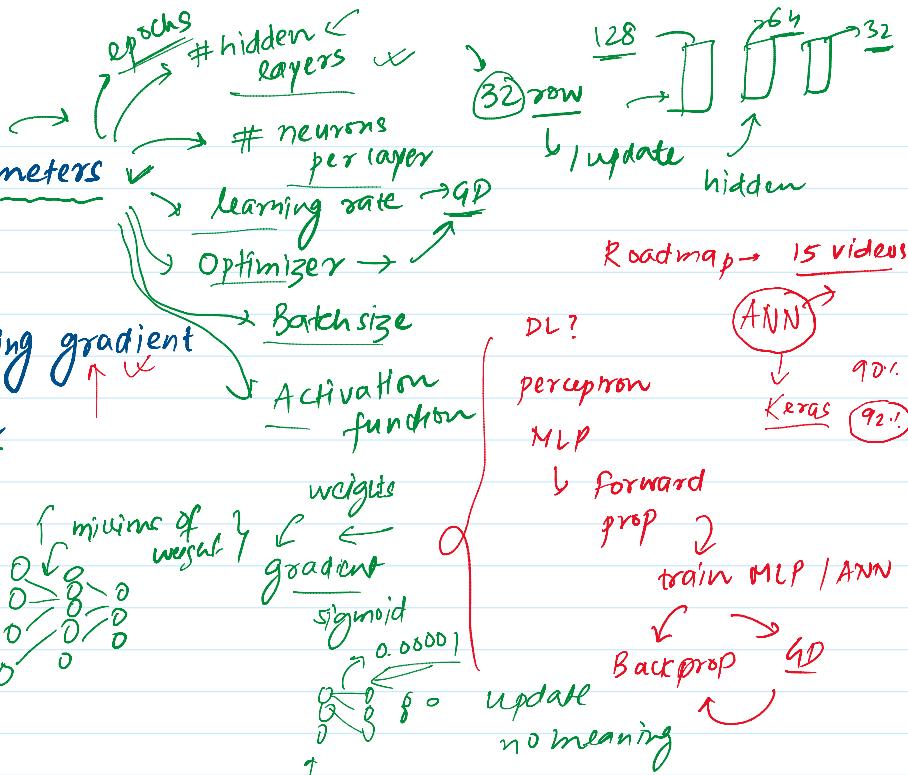
## How to improve a neural network ✓

29 April 2022 13:51

### 1. Fine tuning NN hyperparameters ✓

### 2. By solving problems:

- ✓ → Vanishing / Exploding gradient
- ✓ → Not enough data
- Slow training
- Overfitting



### Fine tuning Hyperparameters

No. of hidden layers

No. of neurons per layer

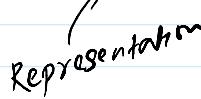
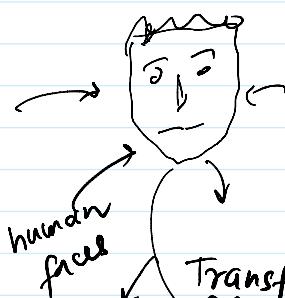
Learning rate

Optimizer

Batch size

Epochs

### 2. No. of hidden layers



hidden

1 hidden layer

1 hidden layer

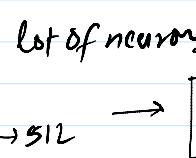
512 neurons

complex



lot of neuron

1 h → 512

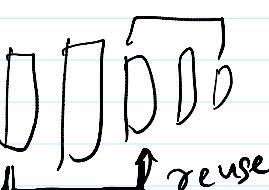


fewer neurons

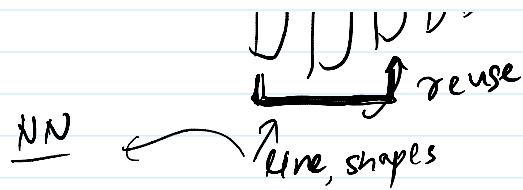
3 / 30 / 300

3 hidden → 32 neuron

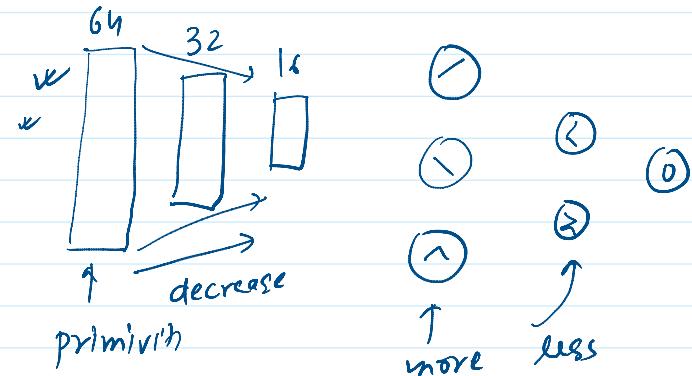
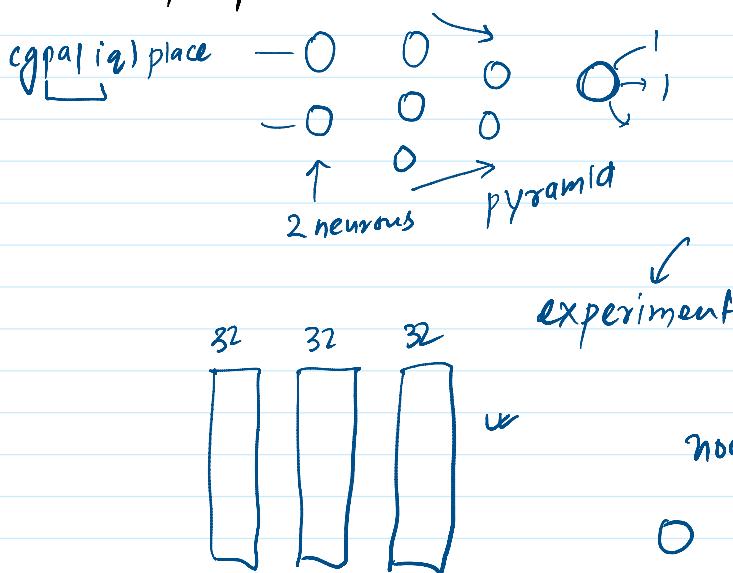
deep neural network  
(Overfitting)



Transfer learning → CNN



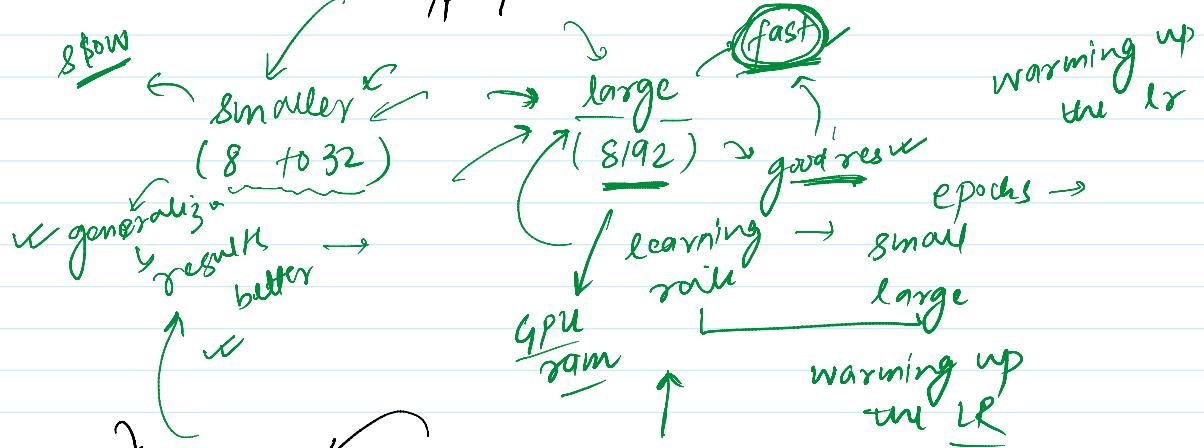
## 2 Neuron / layer



3. Batch size

- Batch → all row → weight update
- Stochastic → 1 row → weight
- MiniBatch → batch → 32 → row → update

hyperparameter



4. Epochs → 100 → 500 → 1000 → early stopping

Keras → callback

4. Epochs  $\xleftarrow[1000]{500}$  → early stopping  
 Keras → stable  $\downarrow$  callback

## Problems with Neural Networks

