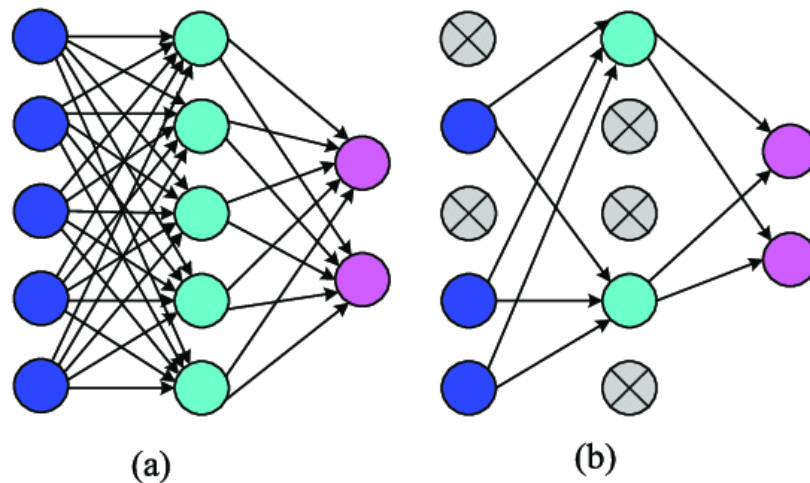


Dropout Layers in ANN



- Removing or dropping off some layers randomly during training this process is called dropout layering.
- It is one of the regularization techniques in ANN.
- ANN has many weights and biases when it has a huge depth, in this case ANN might be overfit to the data.
- Overfit and underfit conditions in ANN are:
 - ✓ Less number of layers : UNDERFIT
 - ✓ More number of layers : OVERFIT
- Always over fit is the main problem in deep ANN and the underfit condition never happened in deep ANN.
- If you observe the above image, image(a) indicate the ANN before dropout and image (b) indicates after dropout.

Working:

Step -1:

In first step should select a dropout ratio for each layer

$$p = \text{Dropout ration}$$

$$0 \leq P \leq 1$$

Step -2:

ANN will select some neurons in each layer based on the dropout ratio and remaining neurons will be deactivated.

Step -3:

Now ANN will start the training with forward and backward propagation, and find the cost function then minimizing it.

Step -4:

ANN testing will start after complete the training. In the testing ANN connect with all layers, neurons and weights will be changed with a new term i.e:

$$w_{new} = w \times p$$

Here p = Dropout ratio selected for each layer.

w = The weight which was selected in training with optimizer.

Note: Learn about the hyperparameter tuning concept in machine learning to find the best P value.