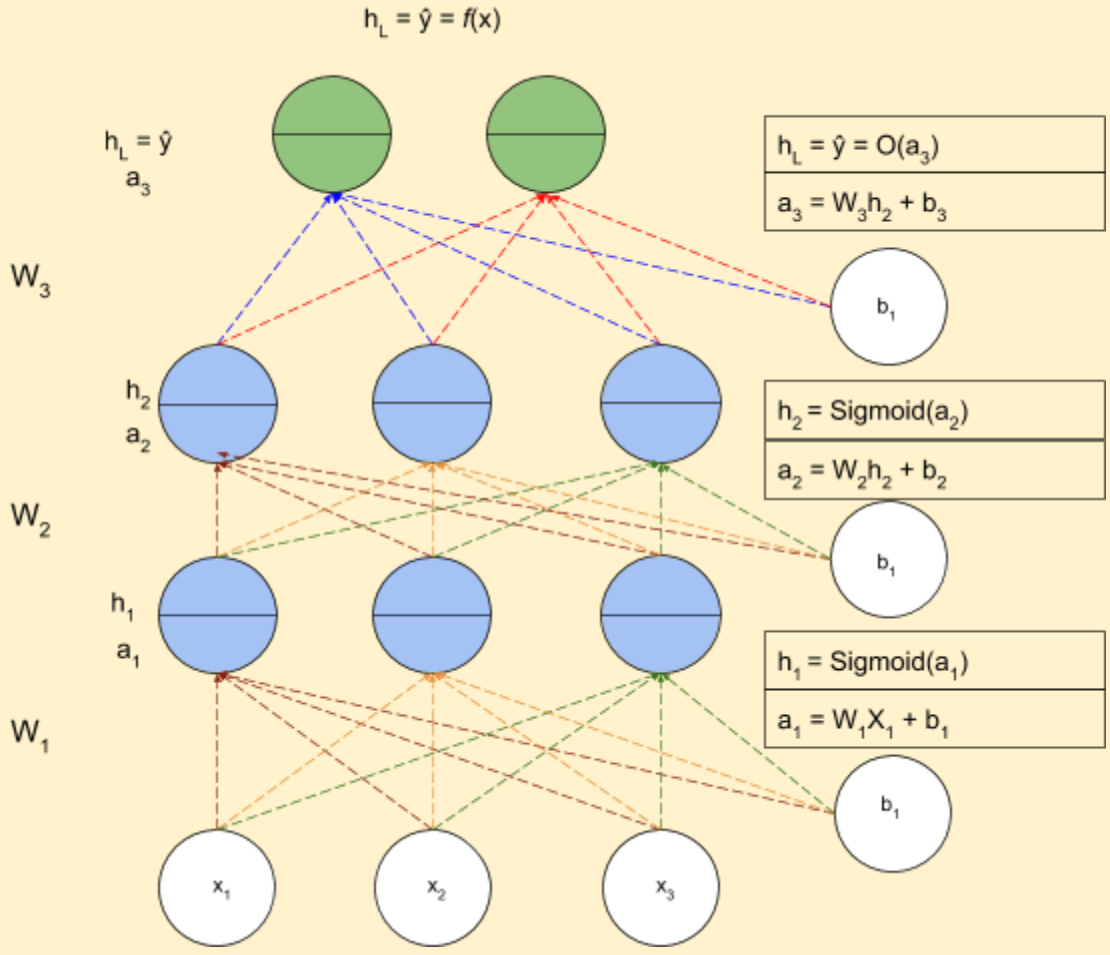
PadhAI: Deep Neural Networks

One Fourth Labs

The Output Layer of a Deep Neural Network

How do we decide the output layer?

1. Here are the dimensions of our values
   a. m : *number of neurons in a layer*
   b. n : *number of inputs to a layer*
   c. $a_i = W_i x_{i-1} + b_i$
      i. $a_i \in \mathbb{R}^m$
      ii. $W_i \in \mathbb{R}^{m \times n}$
      iii. $x_i \in \mathbb{R}^{n \times 1}$
      iv. $b_i \in \mathbb{R}^m$
   d. $h_i = \sigma(a_i)$
      i. $h_i \in \mathbb{R}^m$
2. Here is a quick sample



3. Here, it is possible to write the output function ŷ completely in terms of x
4. $\hat{y} = f(x) = O(W_3 g(W_2 g(W_1 x + b_1) + b_2) + b_3)$
5. Here $\hat{y} \in \mathbb{R}^K$ where K is the number of output units