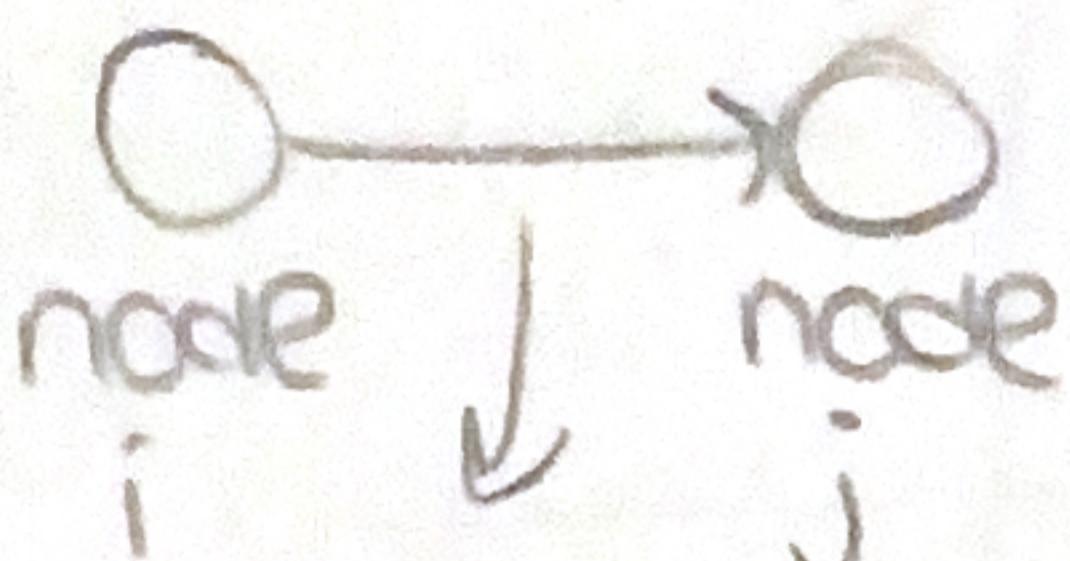
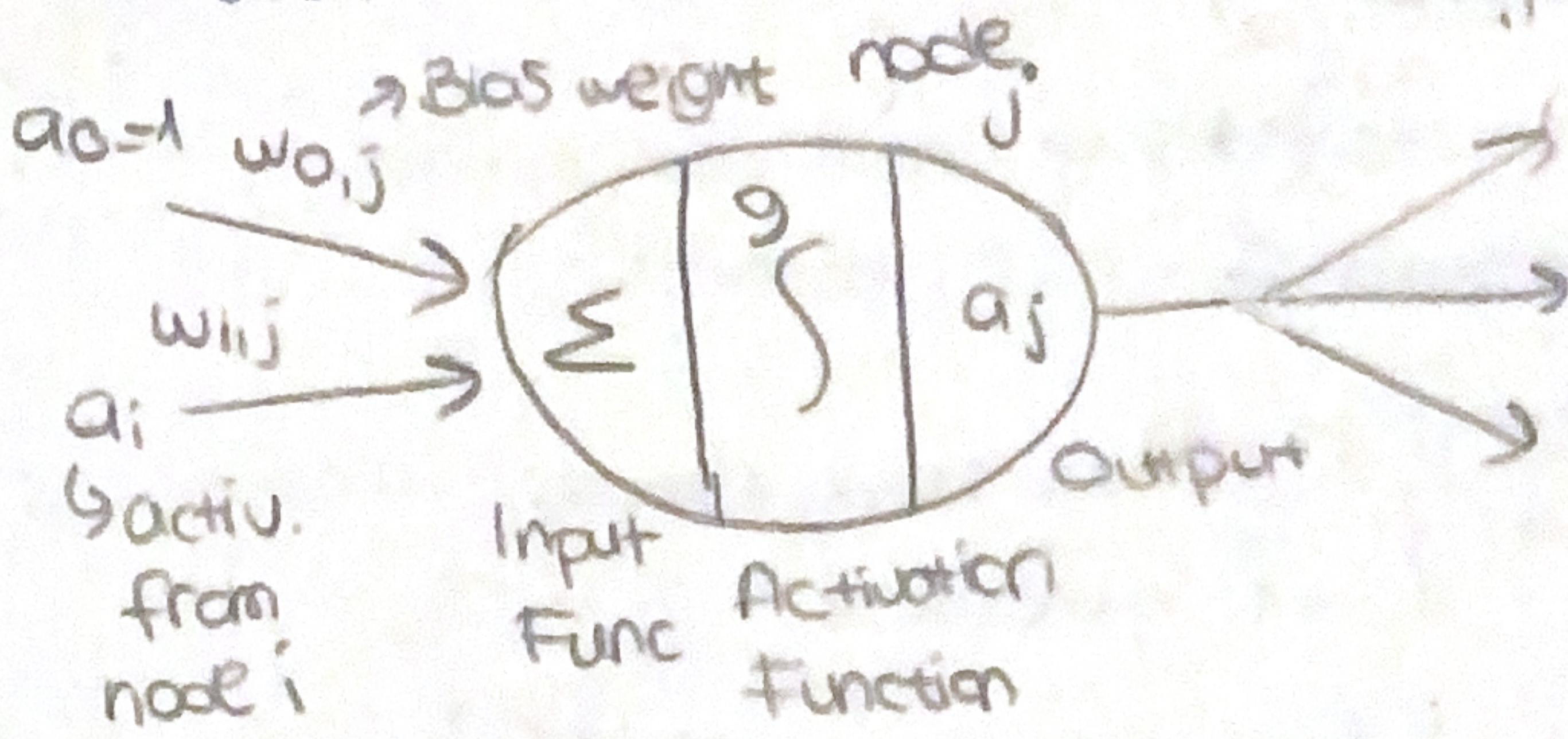


Neural Networks



Links propagate activation; (a_i) to node j

w_{ij} : weight of link i, j

a_0 : dummy (bias)

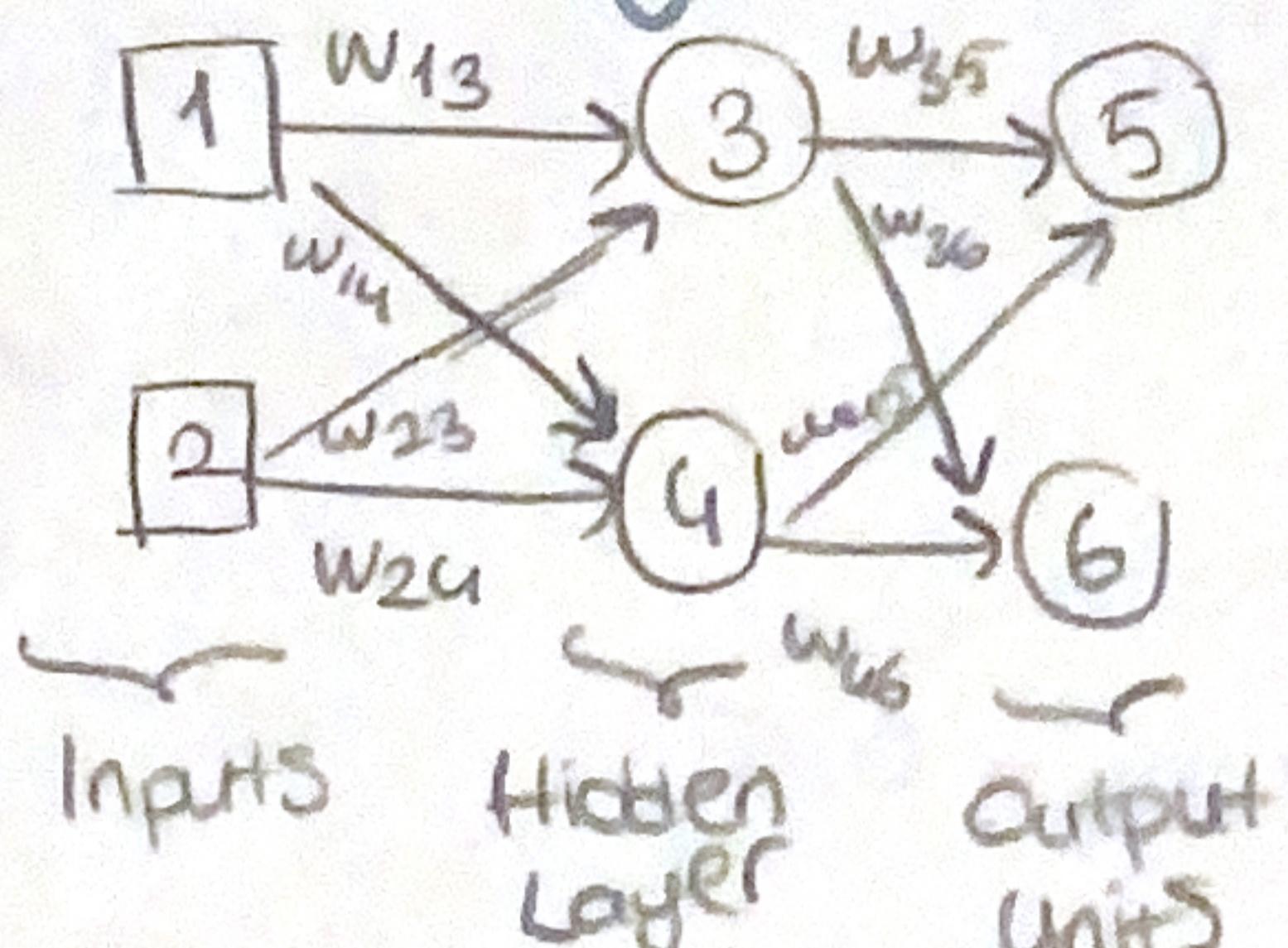
$w_{0,j}$: weight of bias

$$in_j = \sum_{i=0}^n w_{ij} a_i \rightarrow \text{weighted sum of unit } j \text{'s inputs}$$

↓ apply activation

$$a_j = g(in_j) = g\left(\sum_{i=0}^n w_{ij} a_i\right)$$

Multilayer Feed Forward Neural Network



$$a_5 = g(w_{0,5} + w_{3,5} a_3 + w_{4,5} a_4)$$

$$= g(w_{0,5} + w_{3,5} (g(w_{1,3} a_1 + w_{2,3} a_2 + w_{0,3})))$$

$$w_{4,5} (g(w_{1,4} a_1 + w_{2,4} a_2 + w_{0,4}))$$

↓
replace
with inputs
 x_1, x_2