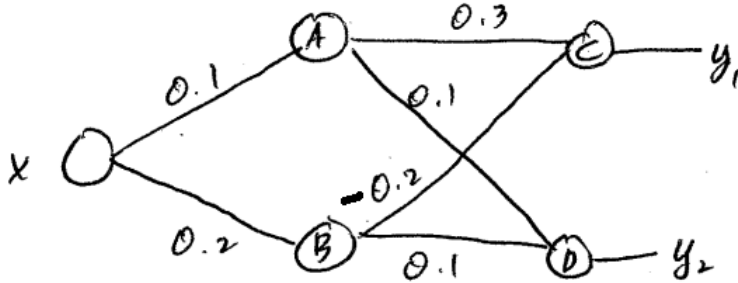


Backpropagation Worksheet

Suppose we have the 1-2-2 network as shown below, and we'll define the transfer function as $\sigma(x) = \text{ReLU}(x)$. Numerically compute each value below going through a forward pass, then go through the backward pass to compute Δ at each node.



Numerically compute each value except for Δ , given that $x = 1$. For the backward pass, you may assume our targets are also both $t_1 = t_2 = 1$. Finally, compute $\Delta W_{jk}^{(i)}$ for each weight.

1. Node A

- Prestate:
- State:
- Derivative ($\sigma'(P)$):
- Δ

5. $\Delta W_{11}^{(1)} =$

6. $\Delta W_{21}^{(1)} =$

7. $\Delta W_{11}^{(2)} =$

2. Node B

- Prestate:
- State:
- Derivative:
- Δ

8. $\Delta W_{21}^{(2)} =$

9. $\Delta W_{12}^{(2)} =$

3. Node C

- Prestate:
- State:
- Derivative:
- Δ

10. $\Delta W_{22}^{(2)} =$

4. Node D

- Prestate:
- State:
- Derivative:
- Δ