Neural Network Evaluation
(a) (1, 0) (b) T T F T

Introduction to AI and ML
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Ethical and Societal Concerns in AI
F T F T T T
The rest of the solution can be found in the original paper.

Evaluation of an AI System
(a) 7 / 10
(b) (1/2, 9/10)
(c) 0.7
(d) 2 and 3

Backpropagation
(a) \[
\frac{\partial L}{\partial S} = \frac{\partial L}{\partial y} \cdot \frac{\partial y}{\partial S} = (y - y_d) \cdot \frac{1}{1 + \exp(S)} \cdot \exp(S)
\]
(b) \[
\frac{\partial S}{\partial w} = x
\]
(c) \[
\frac{\partial L}{\partial w} = \frac{\partial L}{\partial S} \cdot \frac{\partial S}{\partial w} = (y - y_d) \cdot \frac{1}{1 + \exp(S)} \cdot \exp(S) \cdot x
\]
(d) \[
w_{\text{new}} = w - r \cdot \frac{\partial L}{\partial w} = w - 0.4 \cdot (y - y_d) \cdot \frac{1}{1 + \exp(S)} \cdot \exp(S) \cdot x
\]