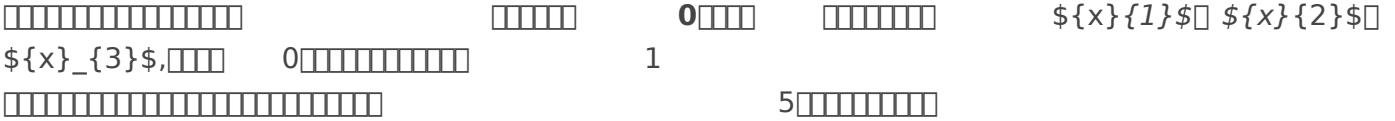
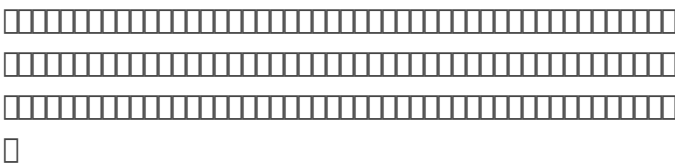


????????(Deep Neural Networks)

4.1 ???????Deep L-layer neural network?



 **DLI**  **deep learning institute**



4.6 Building blocks of deep neural networks?



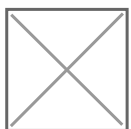
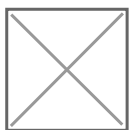
$$\begin{aligned}
 &W^{[l]} \cdot b^{[l]} + z^{[l]} = W^{[l]} a^{[l-1]} + b^{[l]}, \quad a^{[l]} = g^{[l]}(z^{[l]}) \\
 &z^{[l]} = W^{[l]} a^{[l-1]} + b^{[l]} \\
 &a^{[l]} = g^{[l]}(z^{[l]})
 \end{aligned}$$



$$\begin{aligned}
 &da^{[l]} = dz^{[l]} \cdot g^{[l]'}(z^{[l]}) \\
 &dz^{[l]} = W^{[l]} da^{[l-1]} + db^{[l]} \\
 &da^{[l-1]} = dz^{[l-1]} \cdot g^{[l-1]'}(z^{[l-1]})
 \end{aligned}$$



$$\begin{aligned}
 &db^{[l]} = dz^{[l]} \cdot g^{[l]'}(z^{[l]}) \\
 &dz^{[l]} = W^{[l]} da^{[l-1]} + db^{[l]} \\
 &da^{[l-1]} = dz^{[l-1]} \cdot g^{[l-1]'}(z^{[l-1]}) \\
 &dz^{[l-1]} = W^{[l-1]} da^{[l-2]} + db^{[l-1]}
 \end{aligned}$$



$$\begin{aligned}
 &a^{[0]} = x \\
 &b^{[1]} = W^{[1]} a^{[0]} + b^{[1]} \\
 &b^{[2]} = W^{[2]} a^{[1]} + b^{[2]} \\
 &L = \sum_{l=1}^L \text{loss}(a^{[l]}) \\
 &\hat{y} = a^{[L]} \\
 &z = W^{[L]} a^{[L-1]} + b^{[L]}
 \end{aligned}$$

Updated 2025-12-25 09:16:02 CST by eason