Multilayer Perceptron

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Contents

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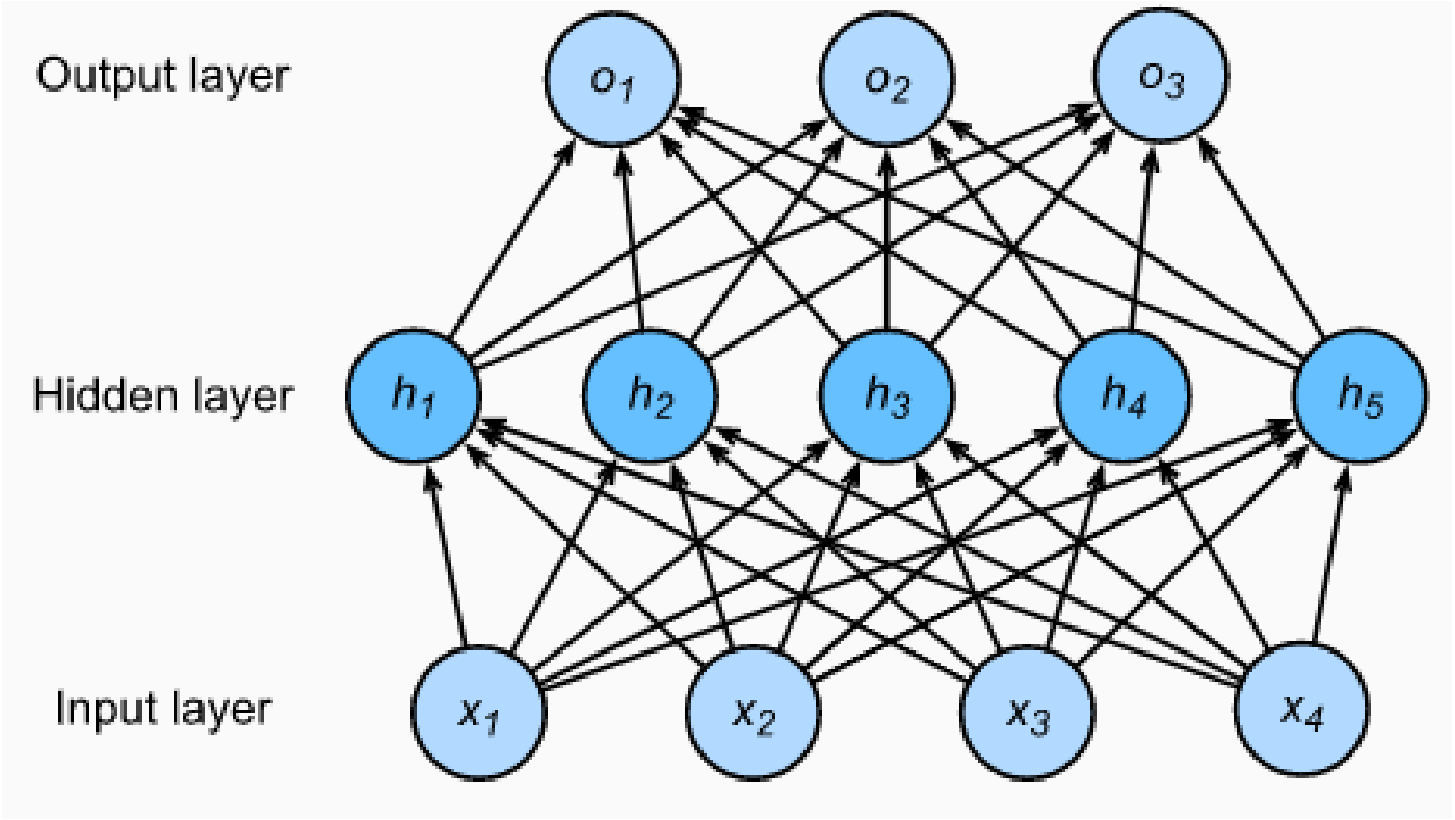
Hidden Layers

Hidden Layers

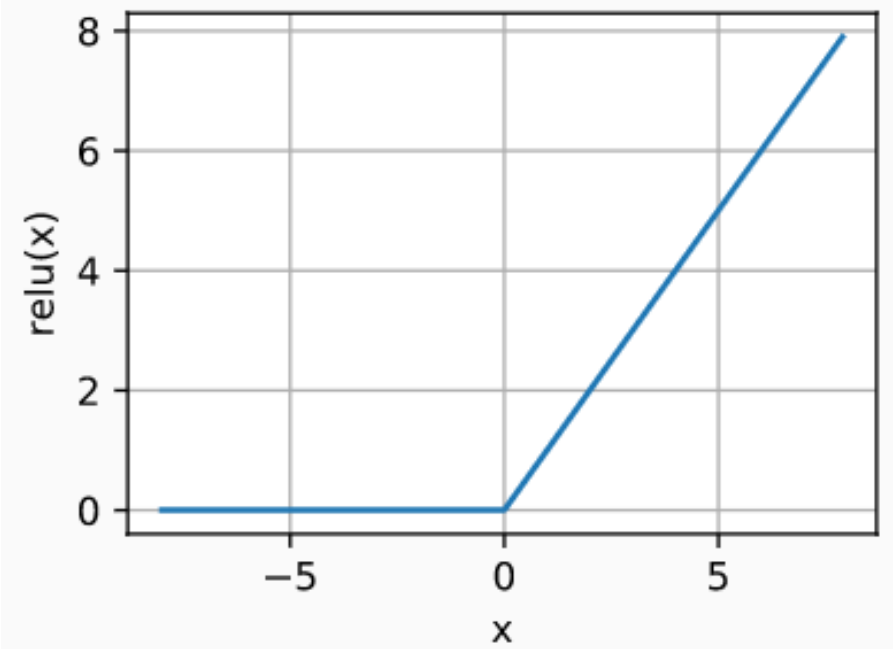


ReLU Function

$$\mathrm{ReLU}(z) = \max(z, 0)$$

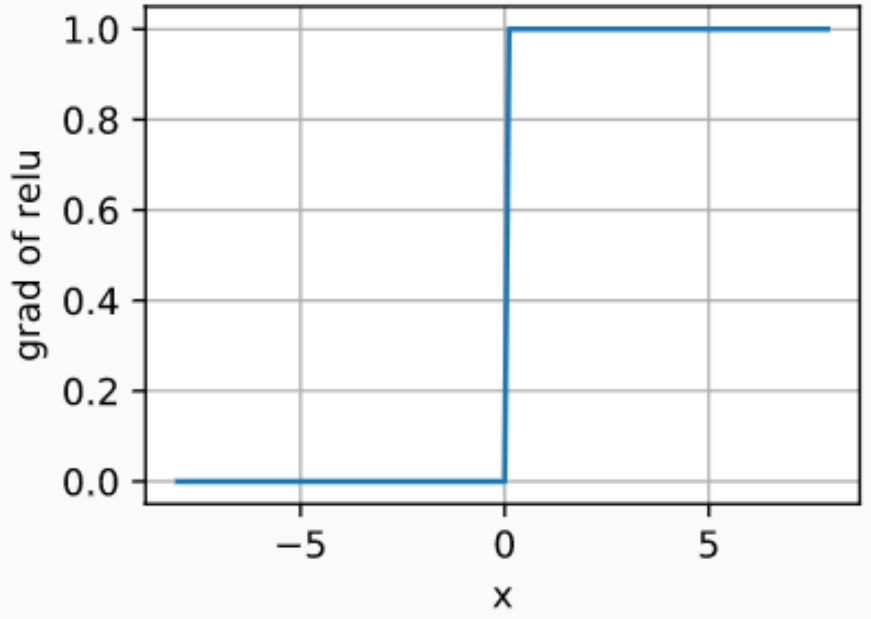
ReLU Function

```
x = nd.arange(-8.0, 8.0, 0.1)
x.attach_grad()
with autograd.record():
    y = x.relu()
d2l.set_figsize((4, 2.5))
d2l.plot(x, y, 'x', 'relu(x)')
```



ReLU Function

```
y.backward()
d2l.plot(x, x.grad, 'x', 'grad of relu')
```

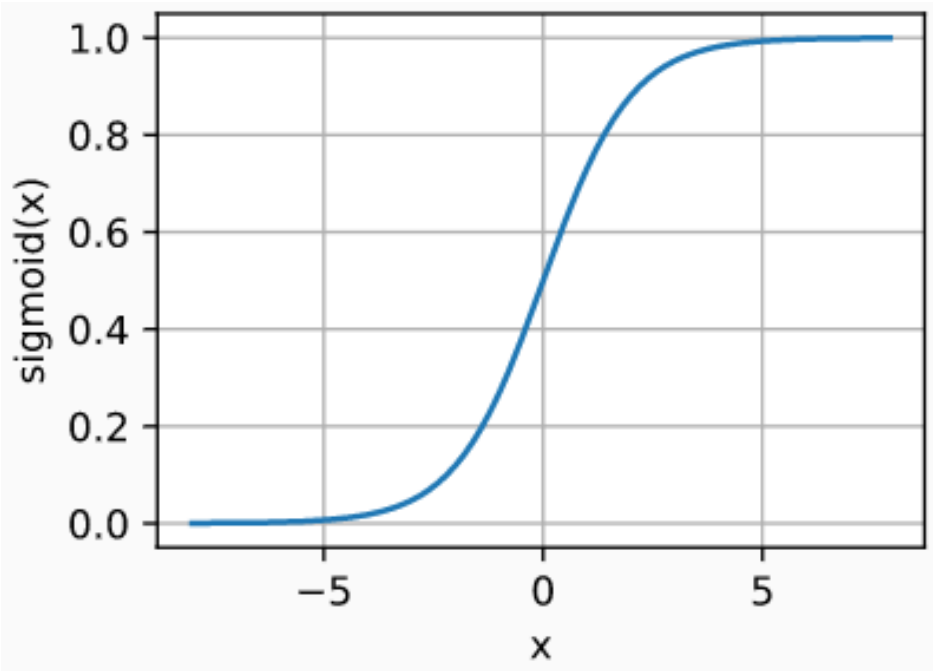


Sigmoid Function

$$\text{sigmoid}(x) = \frac{1}{1 + \exp(-x)}$$

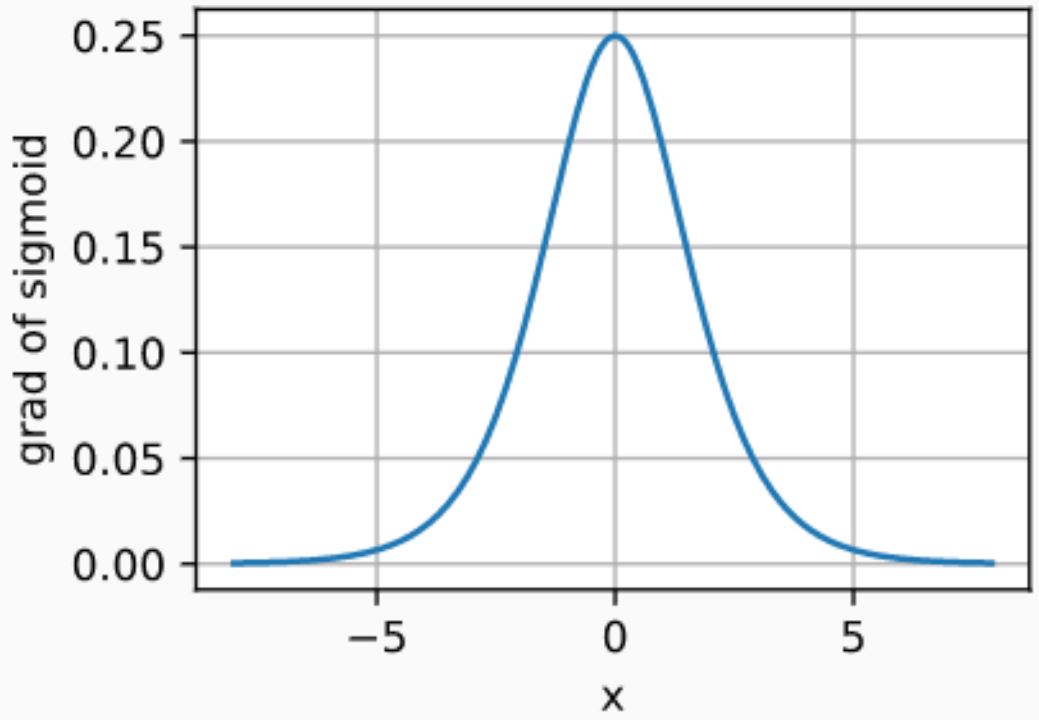
Sigmoid Function

```
y.backward()
d2l.plot(x, x.grad, 'x', 'grad of relu')
```



Sigmoid Function

```
y.backward()
d2l.plot(x, x.grad, 'x', 'grad of sigmoid')
```

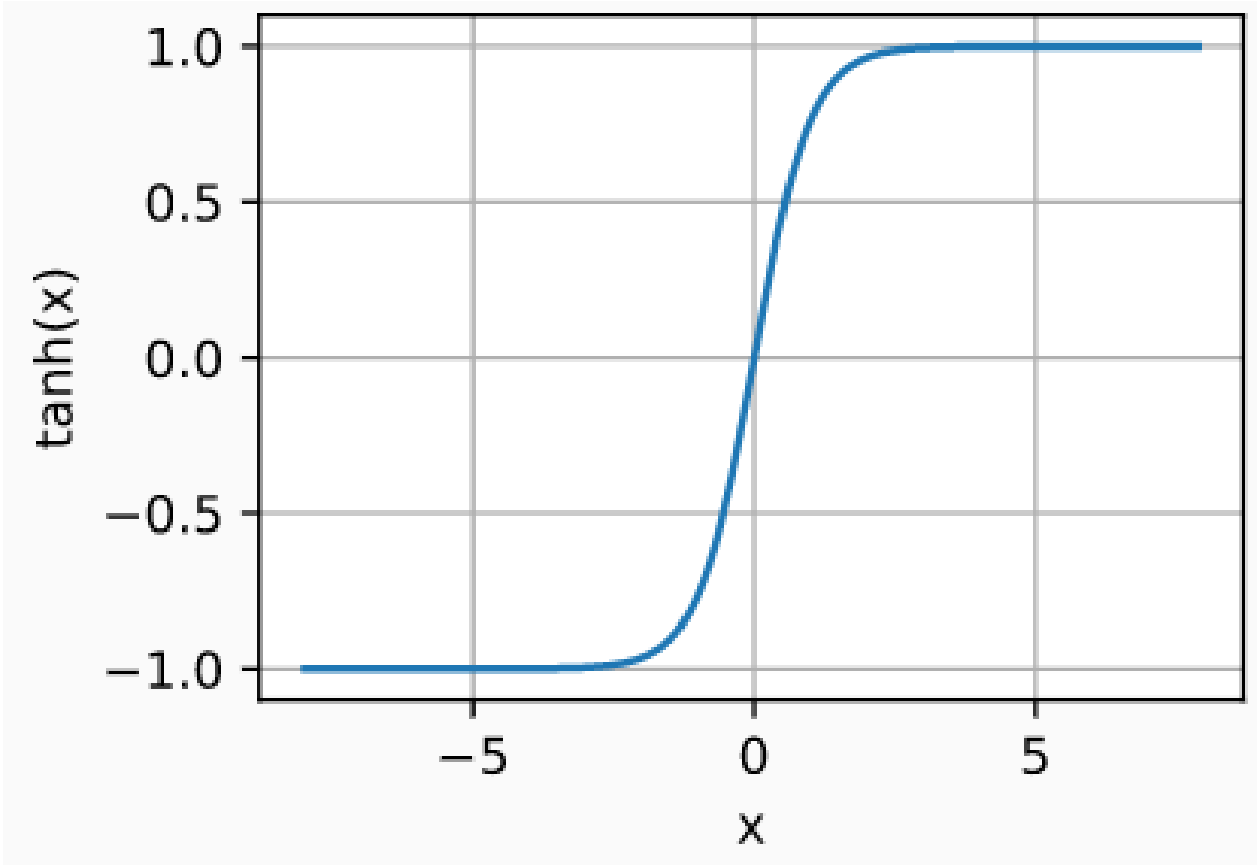


Tanh Function

$$\tanh(x) = \frac{1 - \exp(-2x)}{1 + \exp(-2x)}$$

Tanh Function

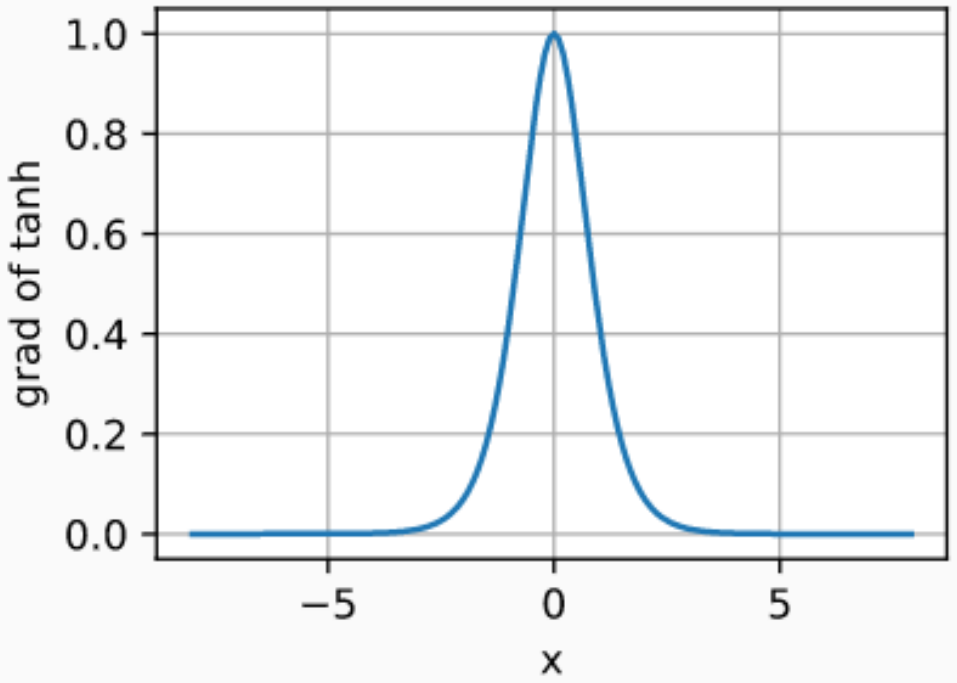
```
with autograd.record():
    y = x.tanh()
d2l.plot(x, y, 'x', 'tanh(x)')
```



Tanh Function

$$\frac{d}{dx}\tanh(x) = 1 - \tanh^2(x)$$

```
y.backward()
d2l.plot(x, x.grad, 'x', 'grad of tanh')
```



Thank You !

Does anyone have any questions?

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Blog: https://ceteongvanness.wordpress.com

Resources

Dive into Deep Learning