



多层感知机

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目录

1. 多层感知机
2. 隐藏层
3. ReLU函数
4. sigmoid函数
5. tanh函数

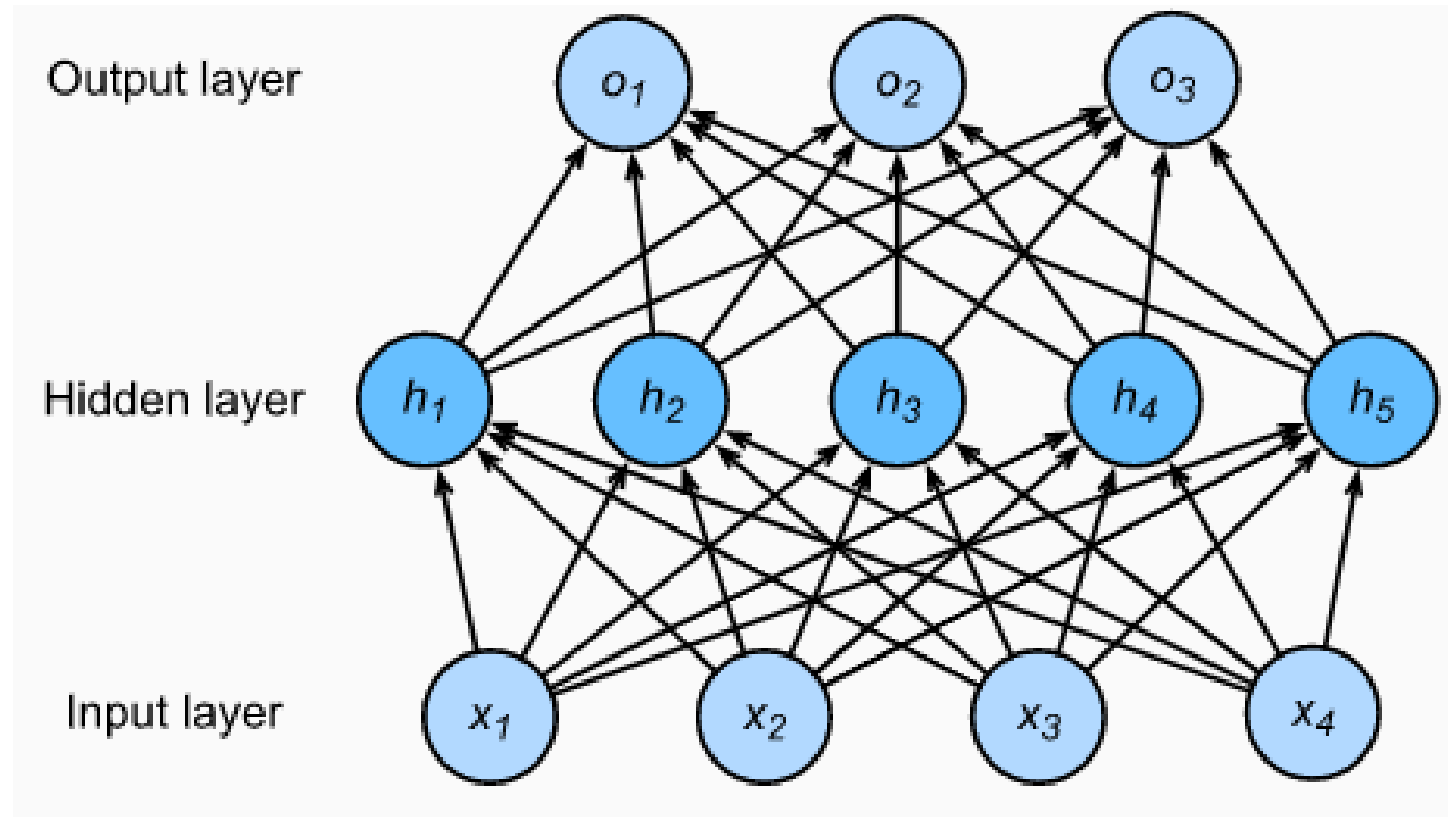
多层感知机



隐藏层



隐藏层



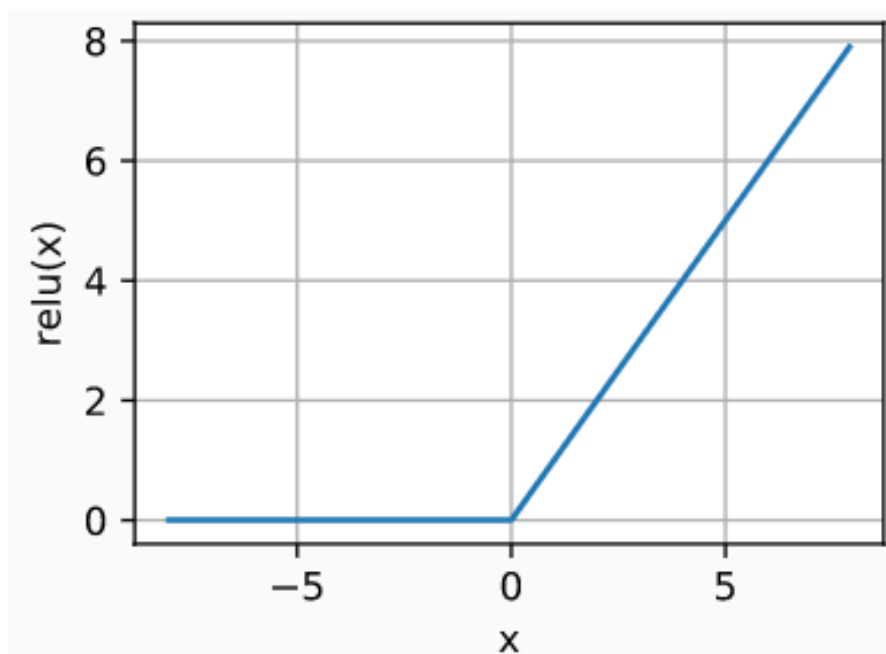
ReLU函数

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

ReLU函数



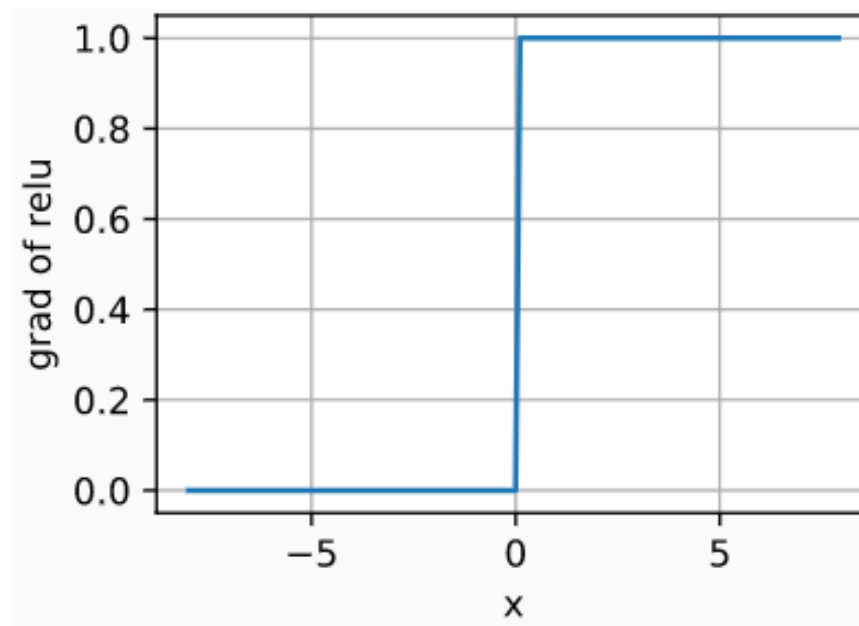
```
x = nd.arange(-8.0, 8.0, 0.1)
x.attach_grad()
with autograd.record():
    y = x.relu()
d2l.set_figsize((4, 2.5))
d2l.plot(x, y, 'x', 'relu(x)')
```



ReLU函数



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



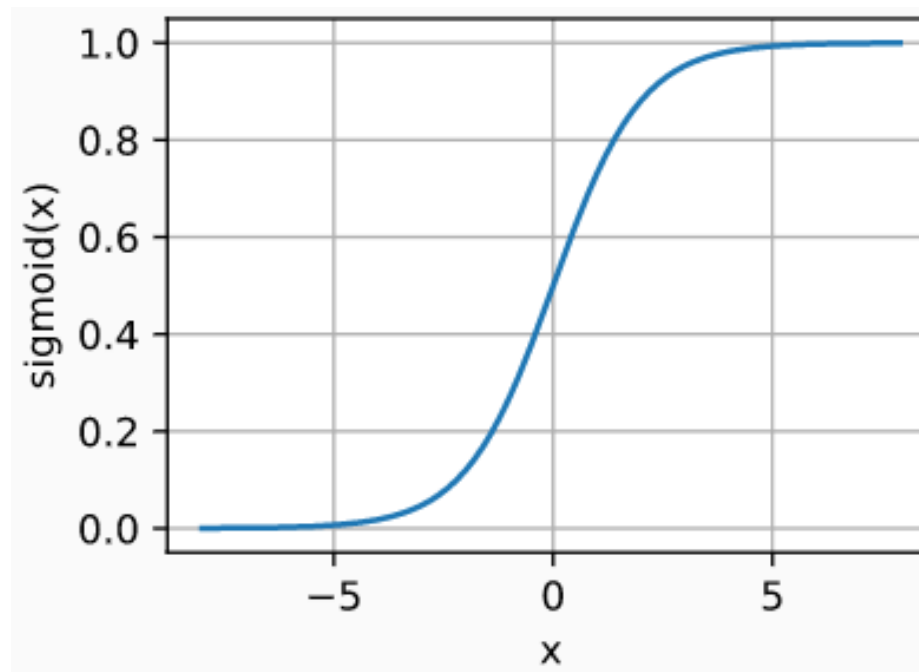
sigmoid函数

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

sigmoid函数



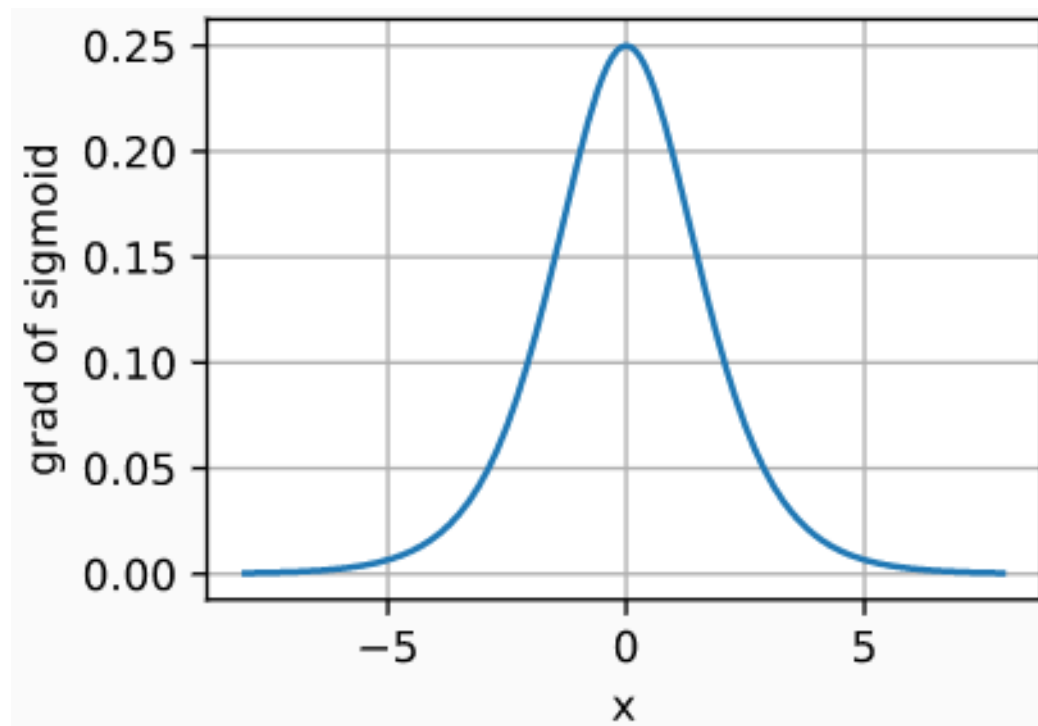
```
y.backward()  
d2l.plot(x, x.grad, 'x', 'grad of relu')
```



sigmoid函数



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



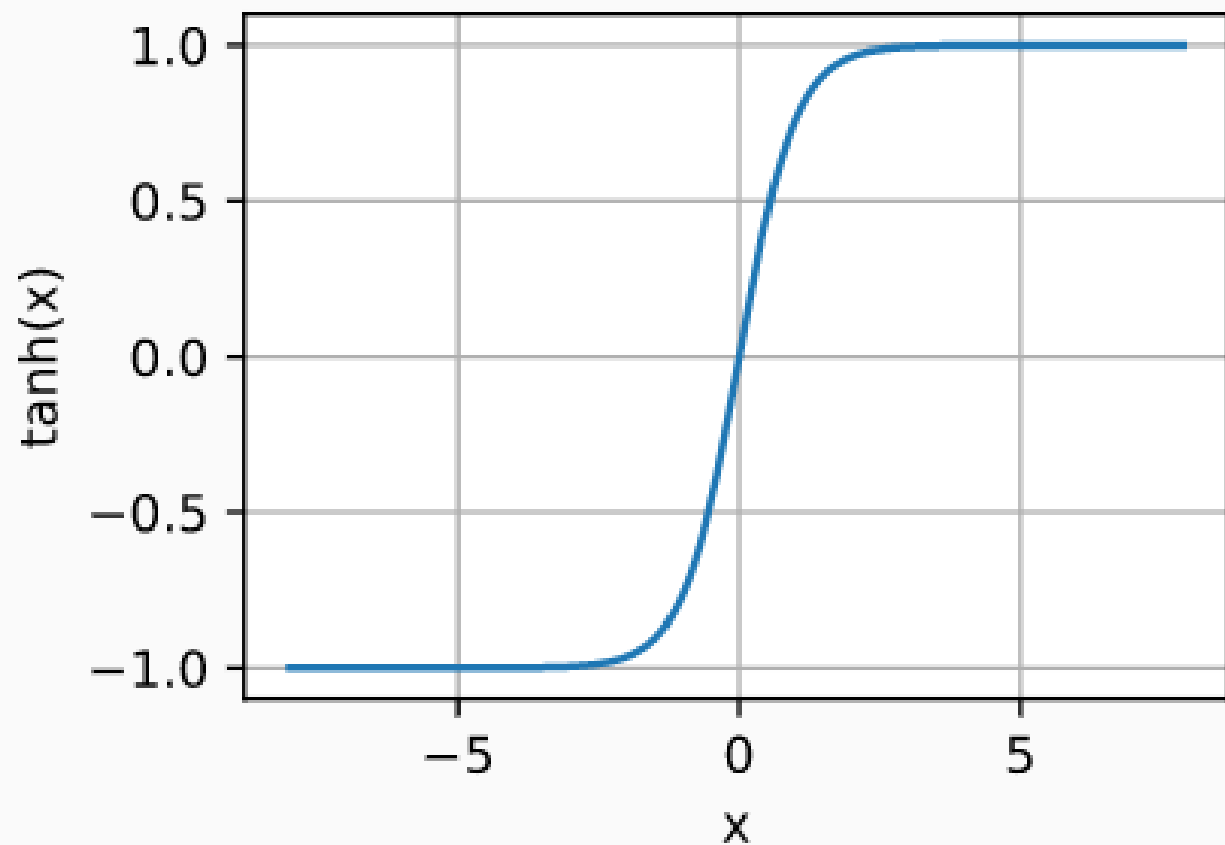
tanh函数

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

tanh函数



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

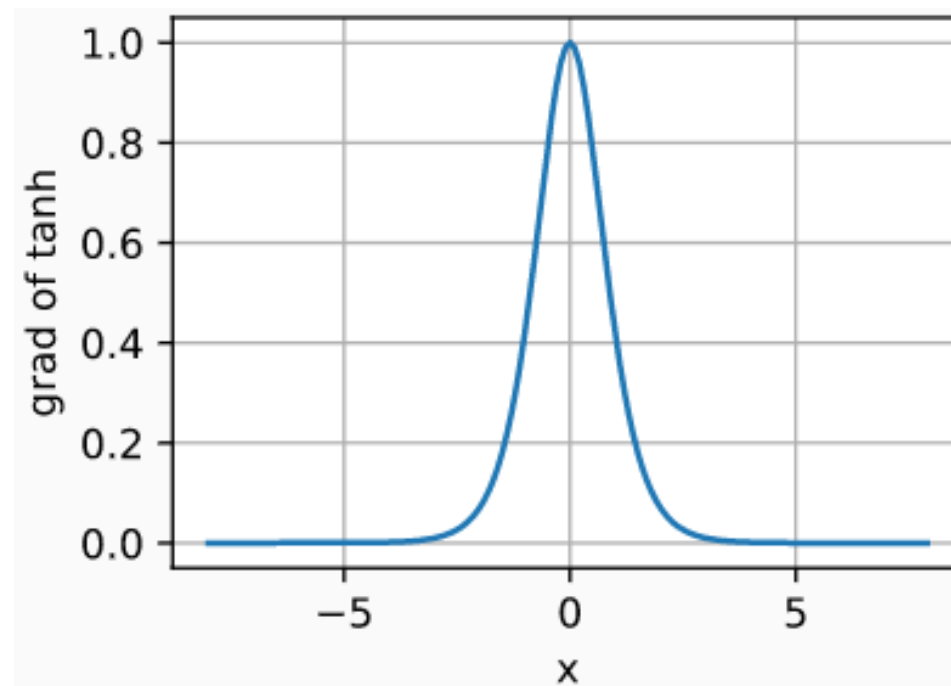


tanh函数

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



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



谢谢！

Does anyone have any questions?

Twitter: @walkercet

Blog: <https://ceteongvanness.wordpress.com>

资源

Dive into Deep Learning