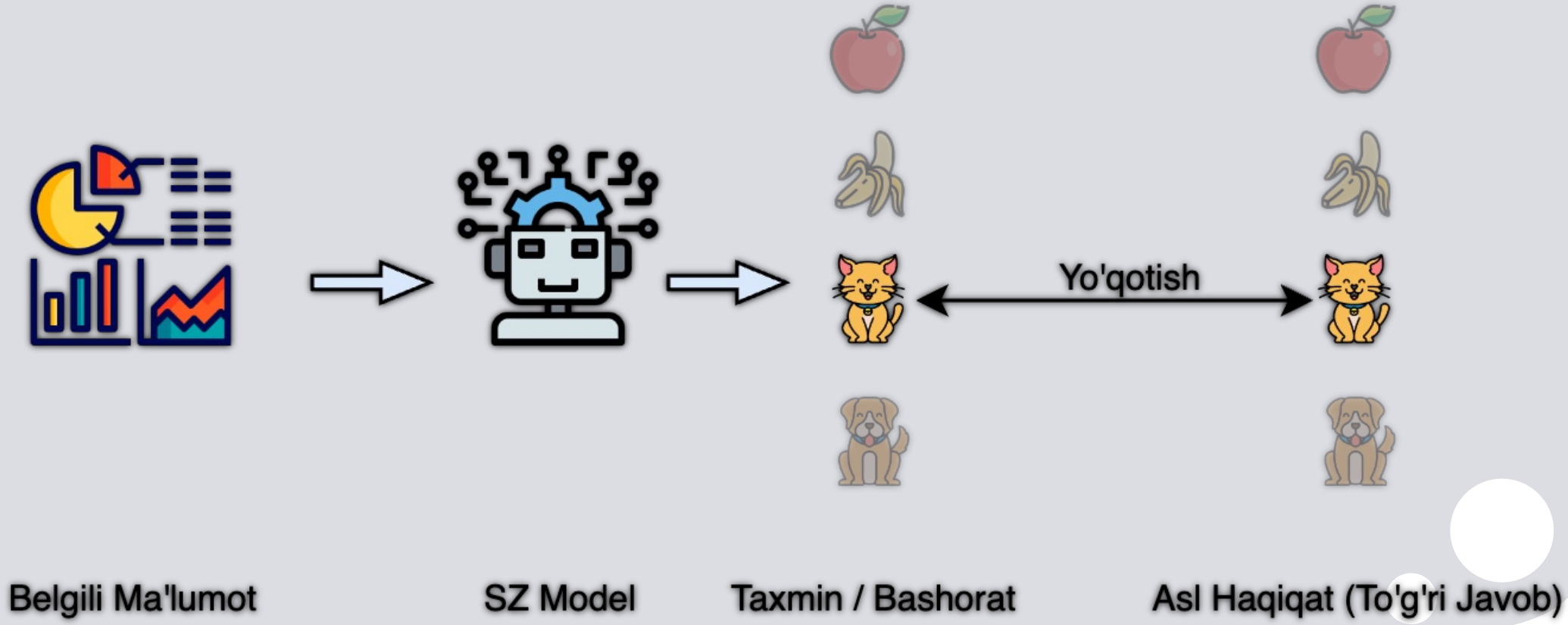
Ko’p Qatlamli Perseptron. Birlashtirishli Neyron Tarqmoqlari

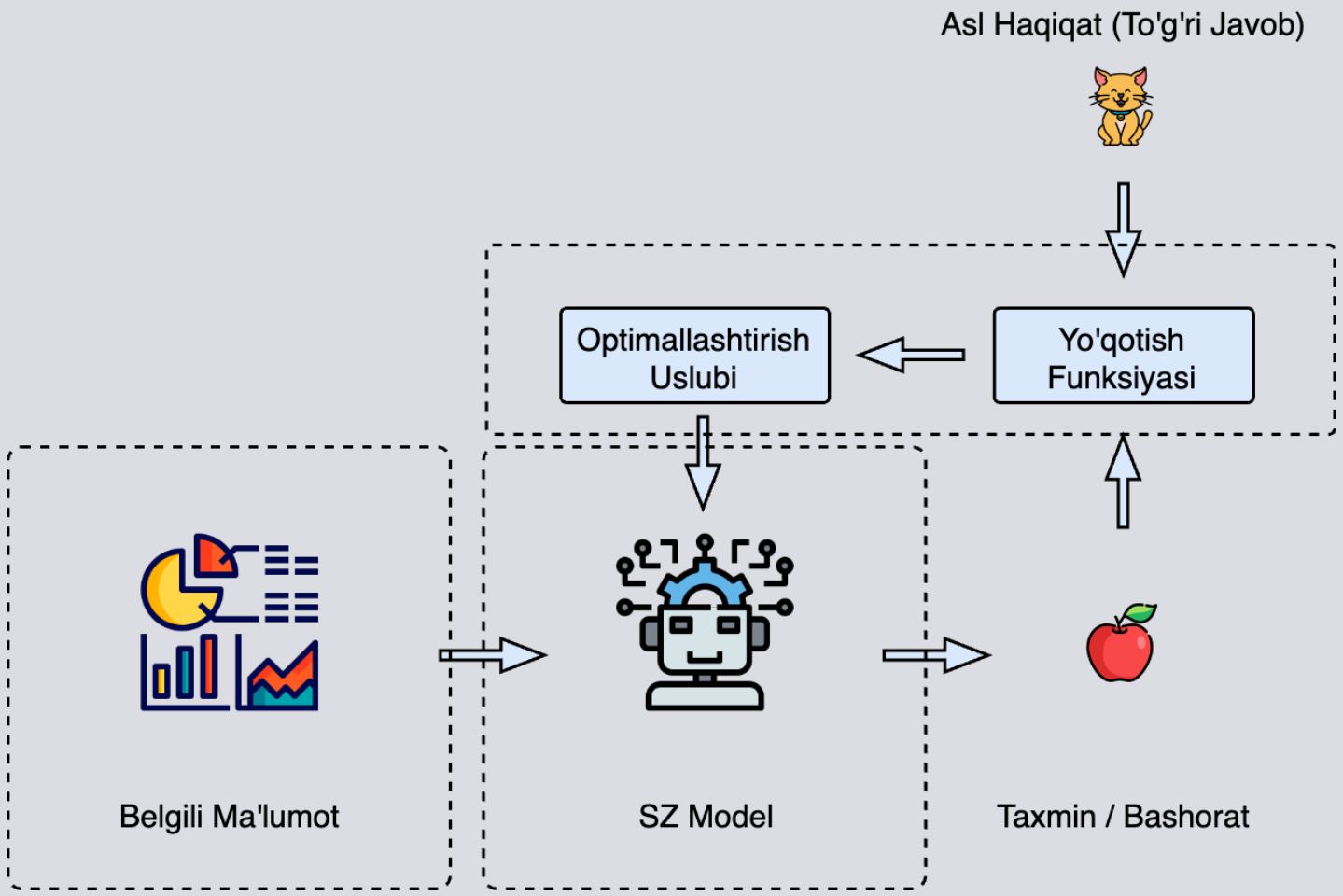
Agenda

- Shug’ullantirish Aylanmasi
- Ko’p Qatlamli Perseptron (MLP)
- Kompyuter Ko’rishi
- Birlashtirishli Neyron Tarqmoqlari

Shug’ullantirish Aylanmasi



Shug’ullantirish Aylanmasi



Sun’iy Neyron Tarmoqlari Turlari

- **MLP**
- **CNN**
- LSTM
- RNN
- GANs
- Diffusion Models

Sun’iy Neyron Tarmoqlari Misollar

- AlexNET
- VGG
- ResNet

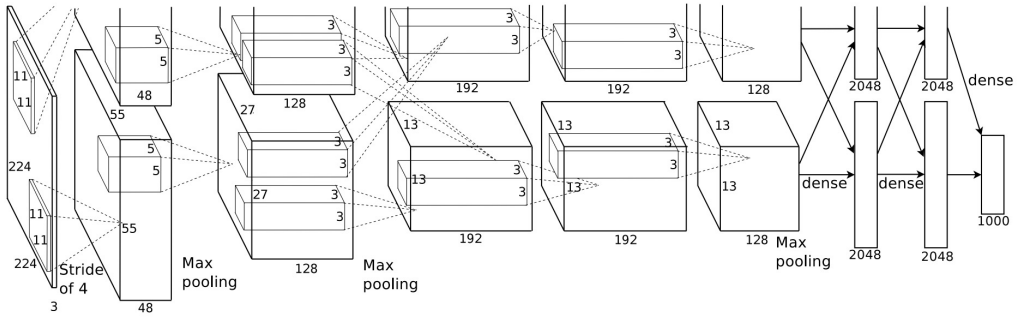
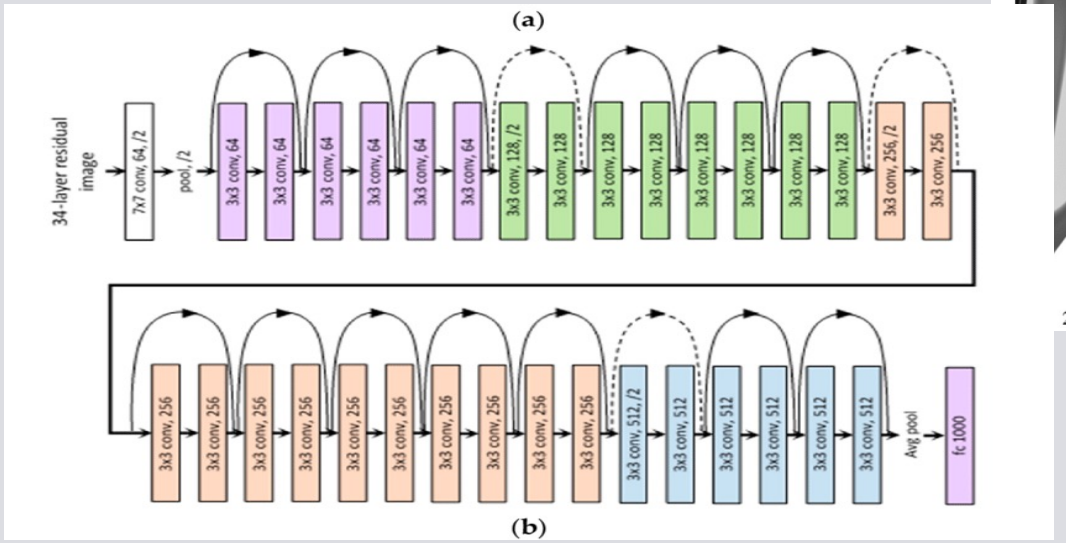
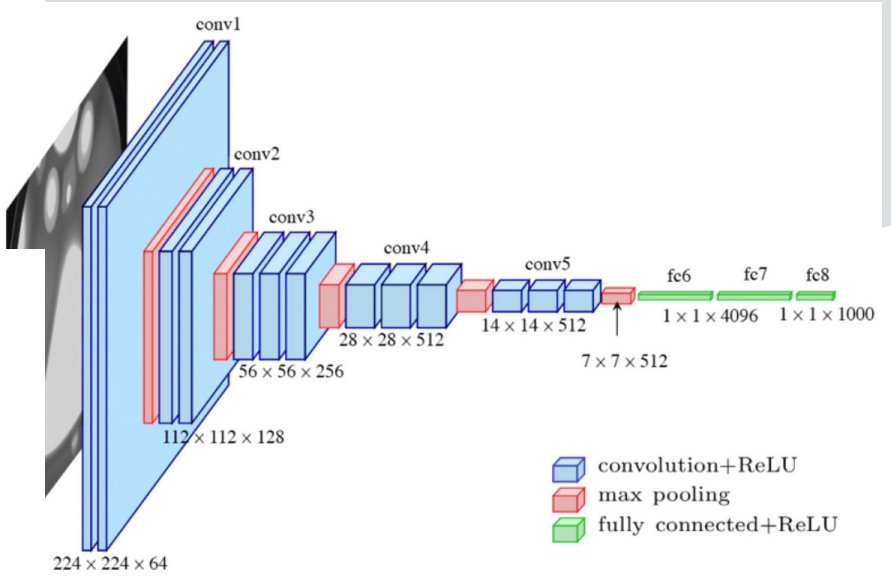
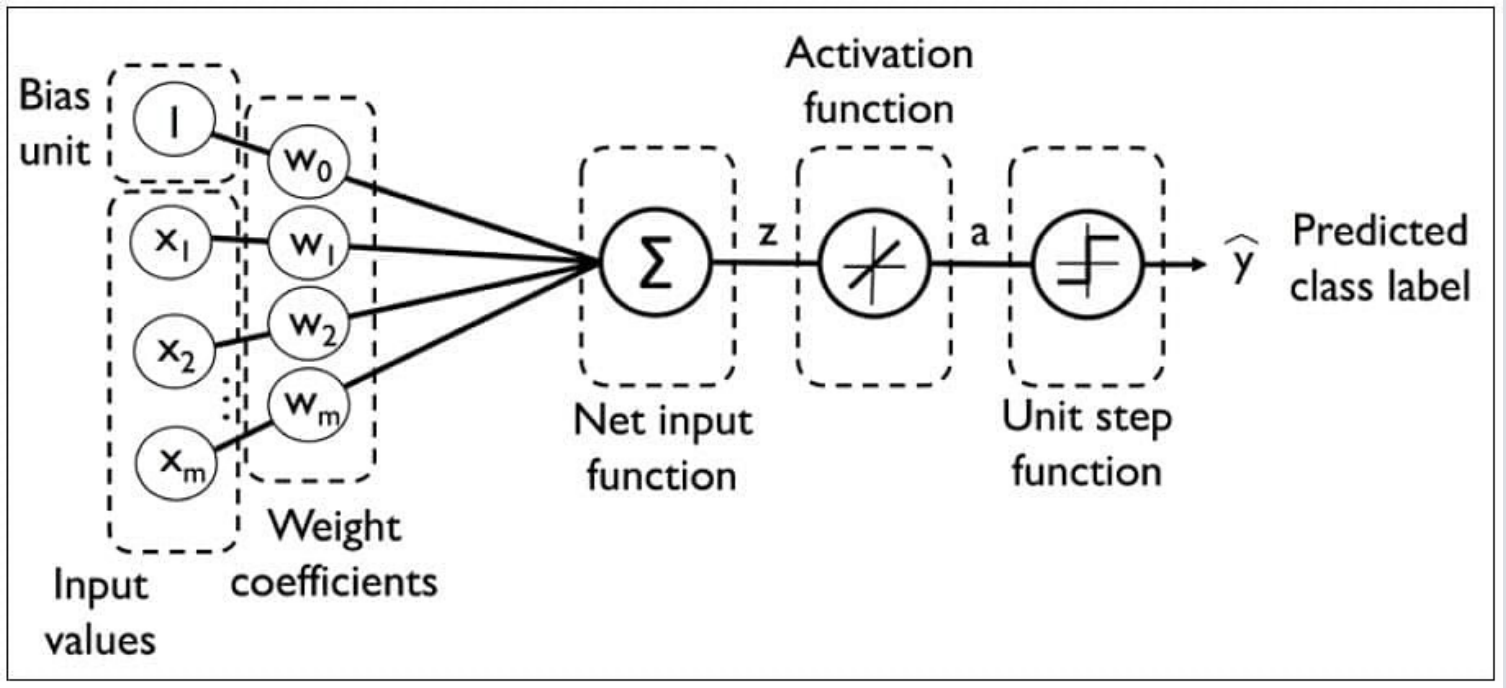


Figure 2: An illustration of the architecture of our CNN, explicitly showing the delineation of responsibil between the two GPUs. One GPU runs the layer-parts at the top of the figure while the other runs the layer-| at the bottom. The GPUs communicate only at certain layers. The network’s input is 150,528-dimensional, the number of neurons in the network’s remaining layers is given by 253,440–186,624–64,896–64,896–43,2 4096–4096–1000.

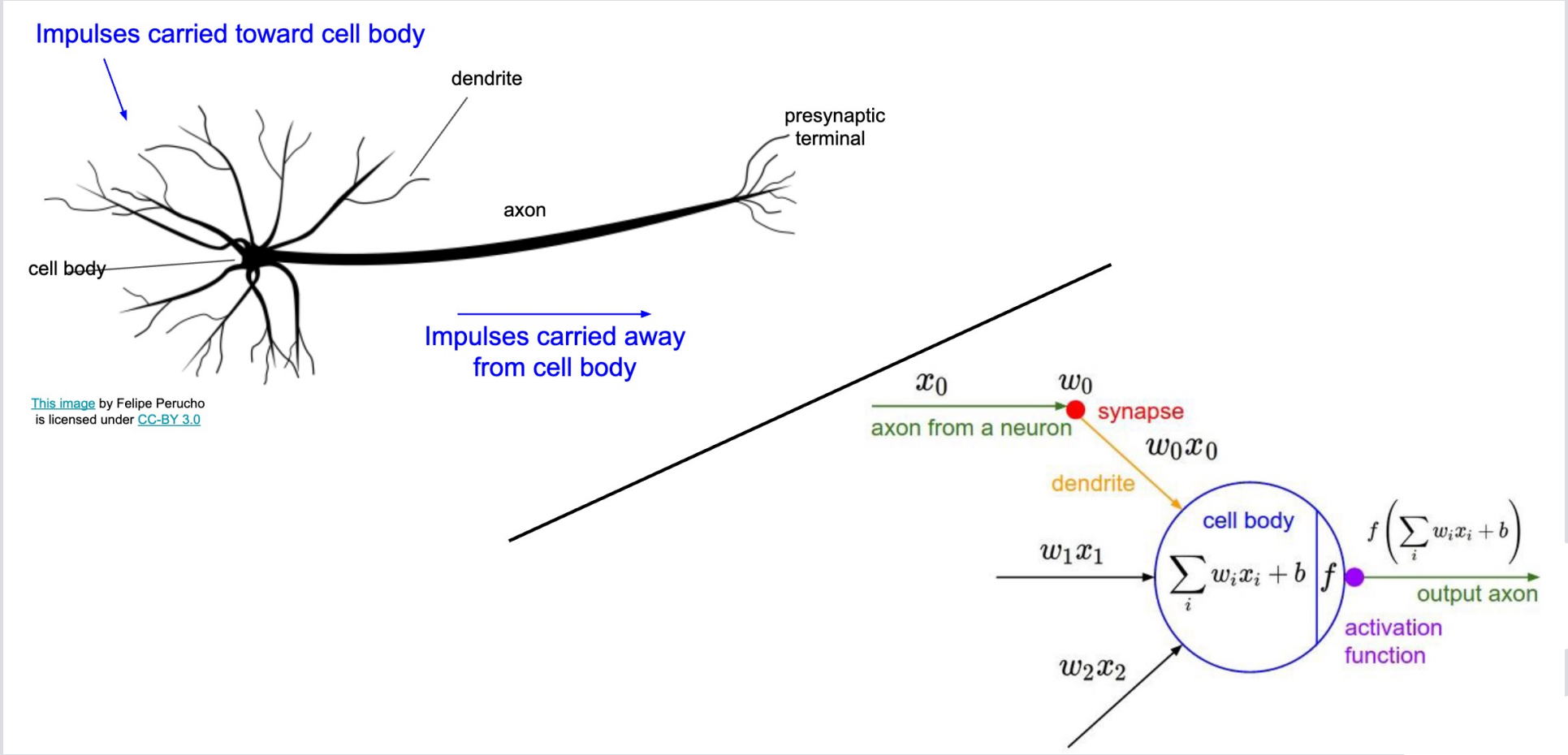




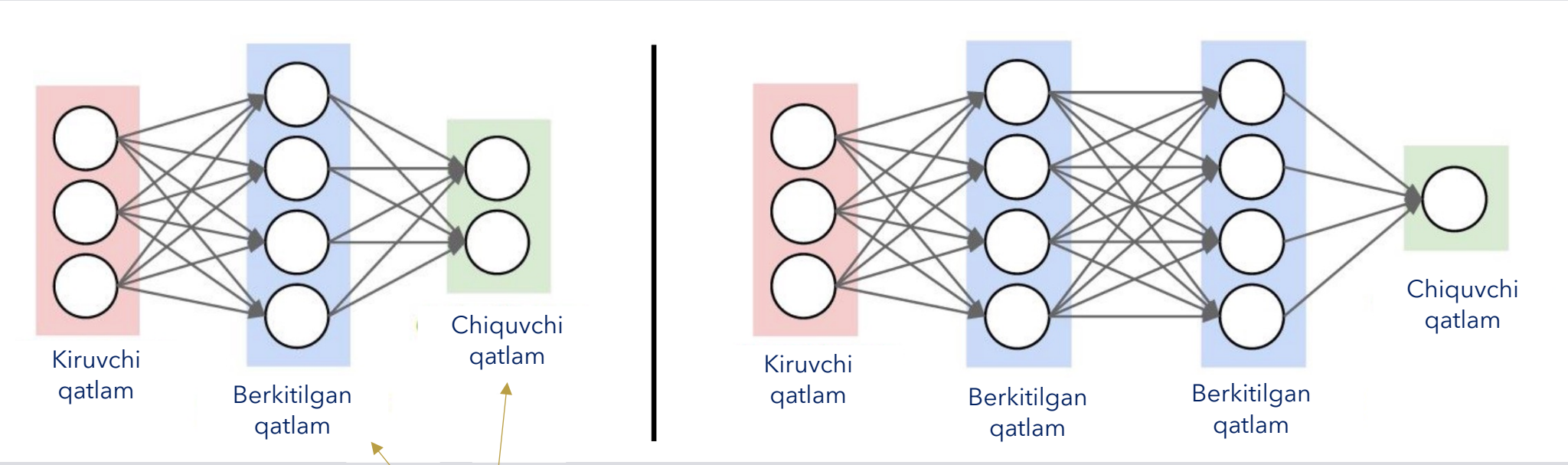
Yakka Qatlamli Perseptron (MLP)



Ko’p Qatlamli Perseptron (MLP)

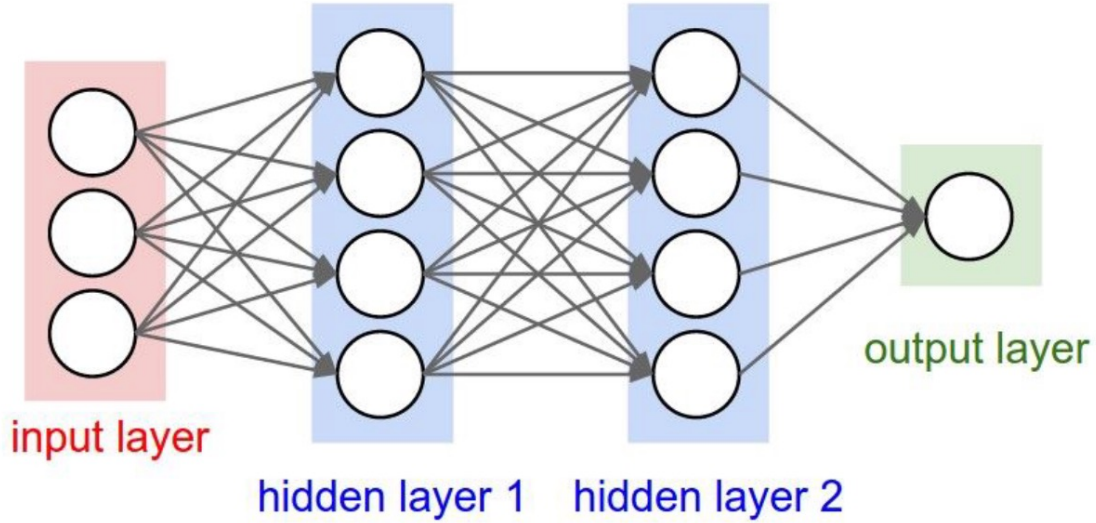


Ko’p Qatlamli Perseptron (MLP)



To’liq bog’langan

Ko’p Qatlamli Perseptron (MLP)

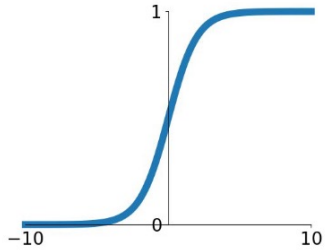



```
# forward-pass of a 3-layer neural network:
f = lambda x: 1.0/(1.0 + np.exp(-x)) # activation function (use sigmoid)
x = np.random.randn(3, 1) # random input vector of three numbers (3x1)
h1 = f(np.dot(W1, x) + b1) # calculate first hidden layer activations (4x1)
h2 = f(np.dot(W2, h1) + b2) # calculate second hidden layer activations (4x1)
out = np.dot(W3, h2) + b3 # output neuron (1x1)
```

Aktivlashtirish Funksiyalari

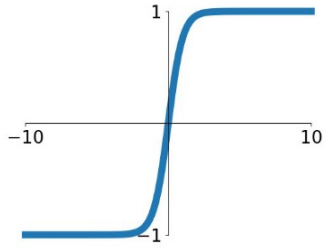
Sigmoid

$$\sigma(x) = \frac{1}{1+e^{-x}}$$



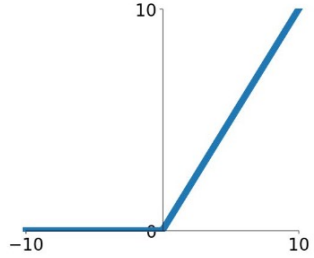
tanh

$$\tanh(x)$$



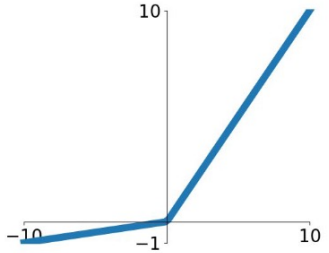
ReLU

$$\max(0, x)$$



Leaky ReLU

$$\max(0.1x, x)$$

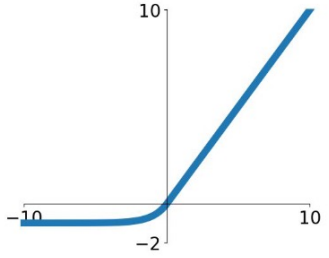


Maxout

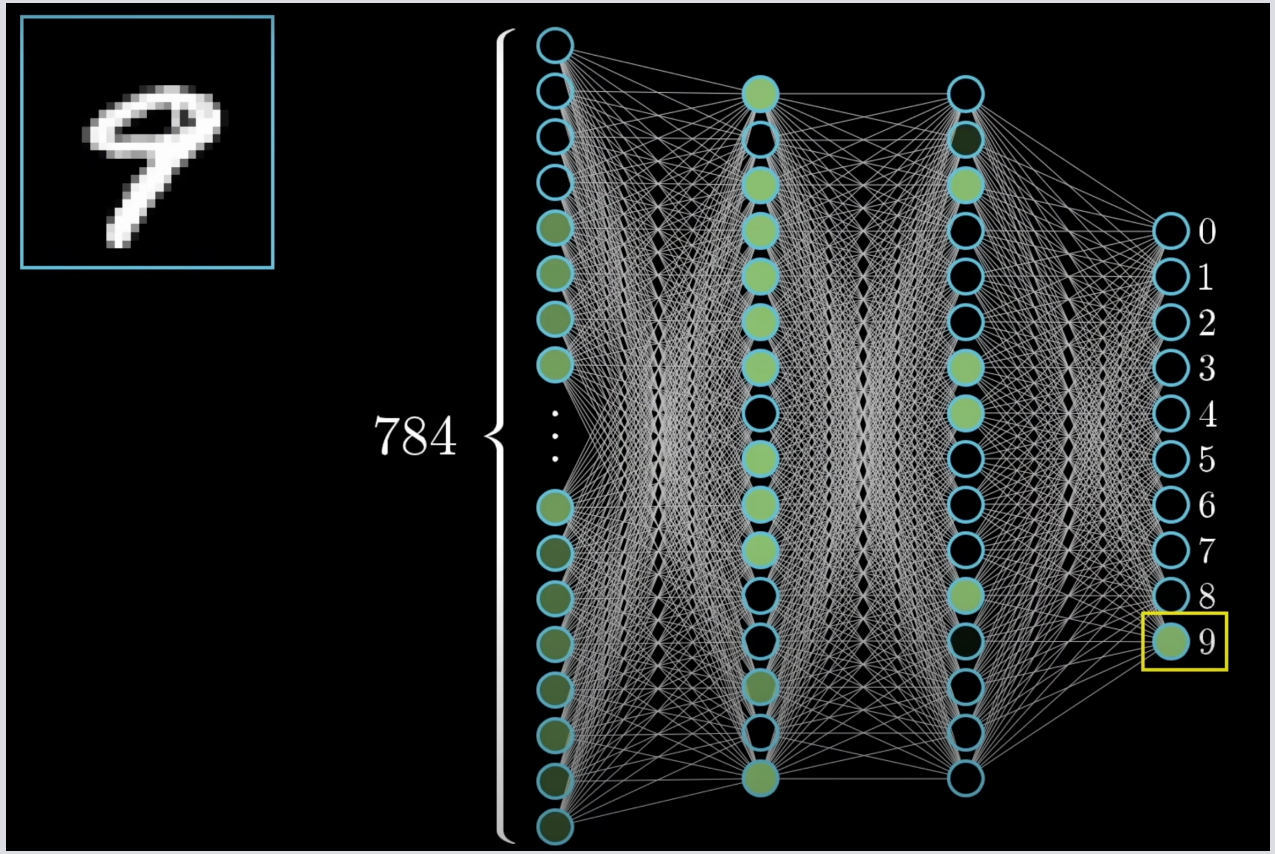
$$\max(w_1^T x + b_1, w_2^T x + b_2)$$

ELU

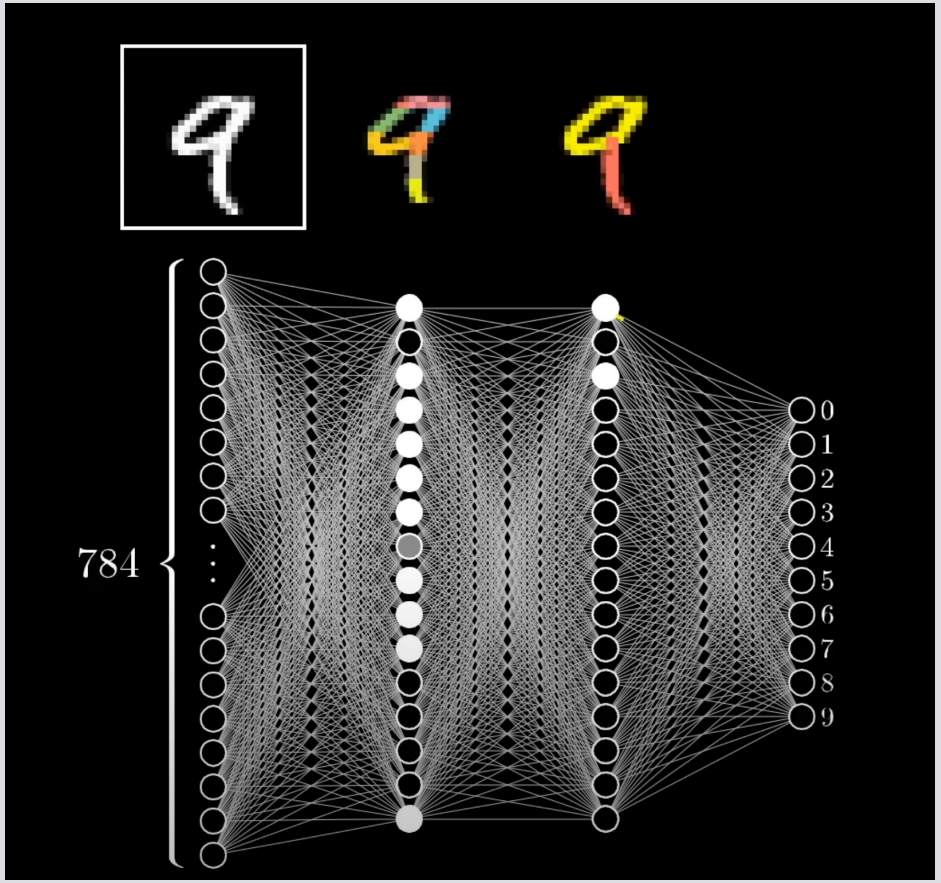
$$\begin{cases} x & x \geq 0 \\ \alpha(e^x - 1) & x < 0 \end{cases}$$



Ko’p Qatlamli Perseptron (MLP)

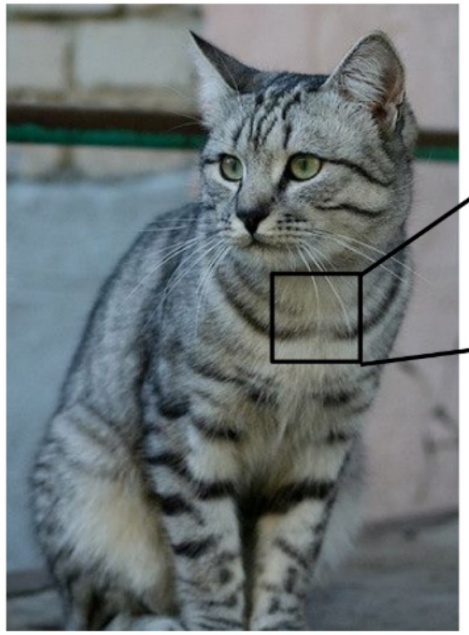


Ko’p Qatlamli Perseptron (MLP)



Tanaffus

Kompyuter Ko’rishi



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```

Kompyuter ko'radigan ma'lumot

Rasm - bir katta kataklar jamlanmasi. Unda [0, 255] sonlari orasidagi qiymatlar yotadi.

Misol:

$$800 \times 600 \times 3$$

3ta kanalli rasm (RGB - QYK)

Kompyuter Ko’rishi

$32 \times 32 \times 3$

$f(x;\theta)$

Parametrlar yoki vazn

$[0.25, 0.022, 0.34, \ldots, 0.004]$

n-ta sinf

Kompyuter Ko’rishi

$32 \times 32 \times 3$

$f(x;\theta)$

Parametrlar yoki vazn

$[0.25, 0.022, 0.34, \ldots, 0.004]$

n-ta sinf

Kompyuter Ko’rishi