

# Lasagne: библиотека для обучения нейронных сетей с использованием Theano

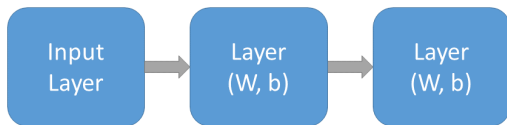
Алексей Артёмов

16 июля 2016 г.

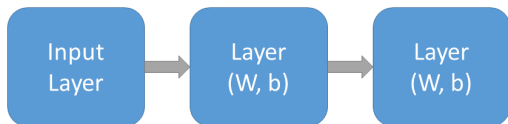
# Тьюториалы по Lasagne

[github.com/craffel/Lasagne-tutorial](https://github.com/craffel/Lasagne-tutorial)  
[github.com/ebenolson/pydata2015](https://github.com/ebenolson/pydata2015)

# Lasagne: слои



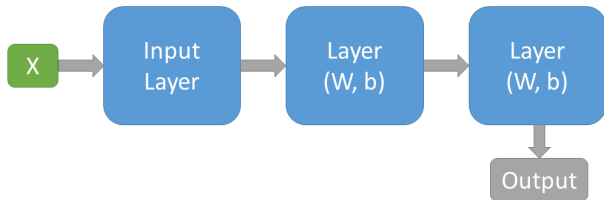
# Lasagne: слои



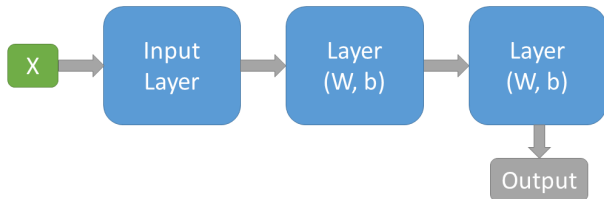
```
from lasagne.layers import InputLayer, DenseLayer

l_in = InputLayer(shape=X.shape)
l_hidden = DenseLayer(l_in, num_units=10, nonlinearity=
    tanh)
l_output = DenseLayer(l_hidden, num_units=N_CLASSES,
    nonlinearity=softmax)
```

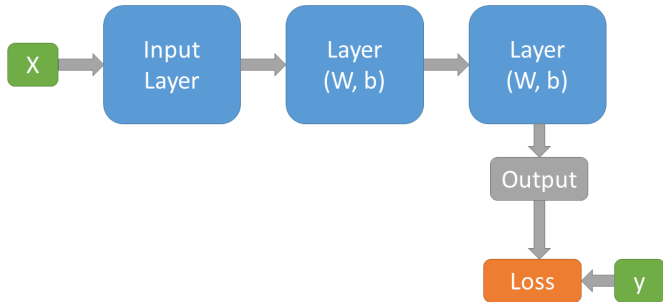
# Lasagne: прямой проход

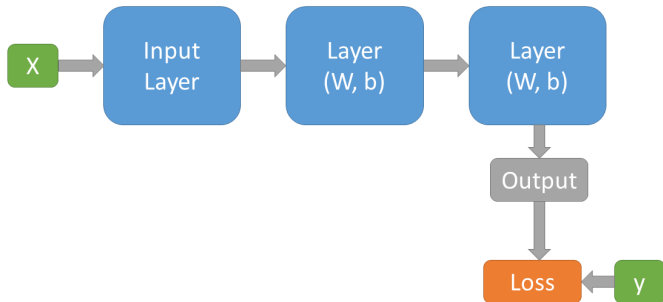


# Lasagne: прямой проход



```
net_output = lasagne.layers.get_output(l_output)
```

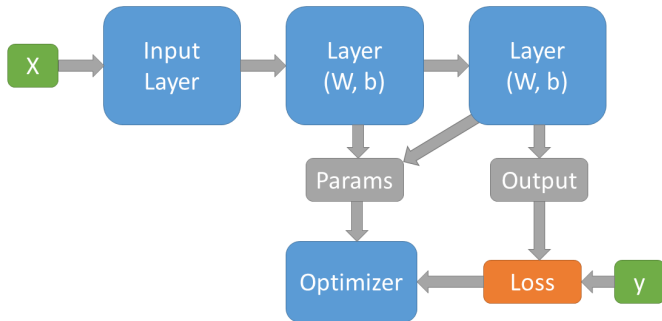




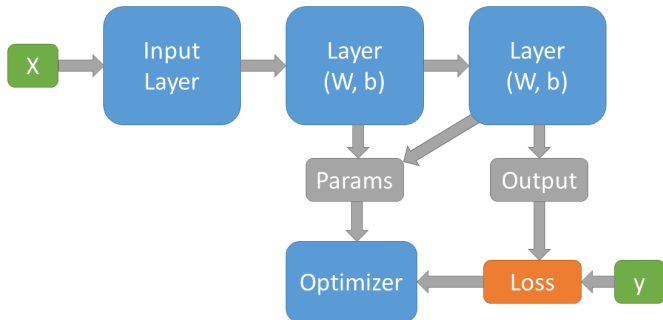
```
true_output = T.ivector('true_output')  
loss = T.mean(lasagne.objectives.  
    categorical_crossentropy(net_output, true_output))
```



## Lasagne: градиенты

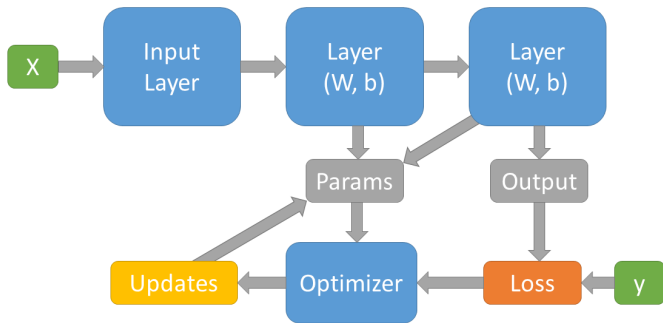


# Lasagne: градиенты

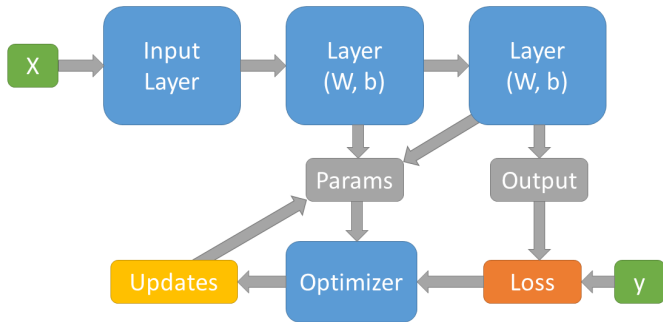


```
all_params = lasagne.layers.get_all_params(l_output)
updates = lasagne.updates.sgd(loss, all_params,
                               learning_rate=0.01)
```

## Lasagne: обучение сети



## Lasagne: обучение сети



```
train = theano.function([l_in.input_var, true_output],
                        loss, updates=updates)
```

```
get_output = theano.function([l_in.input_var],
                             net_output)
```

```
for n in xrange(num_epochs):
    train(X, y)
```