

```
# alexnet.py
```

```
""" AlexNet.
```

```
References:
```

- Alex Krizhevsky, Ilya Sutskever & Geoffrey E. Hinton. ImageNet Classification with Deep Convolutional Neural Networks. NIPS, 2012.

```
Links:
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- [AlexNet Paper](http://papers.nips.cc/paper/4824-imagenet-classification-with-deep-convolutional-neural-networks.pdf)

```
"""
```

```
import tflearn
```

```
from tflearn.layers.conv import conv_2d, max_pool_2d
```

```
from tflearn.layers.core import input_data, dropout, fully_connected
```

```
from tflearn.layers.estimator import regression
```

```
from tflearn.layers.normalization import local_response_normalization
```

```
def alexnet(width, height, lr):
```

```
    network = input_data(shape=[None, width, height, 1], name='input')
```

```
    network = conv_2d(network, 96, 11, strides=4, activation='relu')
```

```
    network = max_pool_2d(network, 3, strides=2)
```

```
    network = local_response_normalization(network)
```

```
    network = conv_2d(network, 256, 5, activation='relu')
```

```
    network = max_pool_2d(network, 3, strides=2)
```

```
    network = local_response_normalization(network)
```

```
    network = conv_2d(network, 384, 3, activation='relu')
```

```
    network = conv_2d(network, 384, 3, activation='relu')
```

```
    network = conv_2d(network, 256, 3, activation='relu')
```

```
    network = max_pool_2d(network, 3, strides=2)
```

```
    network = local_response_normalization(network)
```

```
    network = fully_connected(network, 4096, activation='tanh')
```

```
    network = dropout(network, 0.5)
```

```
    network = fully_connected(network, 4096, activation='tanh')
```

```
    network = dropout(network, 0.5)
```

```
    network = fully_connected(network, 3, activation='softmax')
```

```
    network = regression(network, optimizer='momentum',
                          loss='categorical_crossentropy',
                          learning_rate=lr, name='targets')
```

```
    model = tflearn.DNN(network, checkpoint_path='model_alexnet',
```

```
                        max_checkpoints=1, tensorboard_verbose=0,
                        tensorboard_dir='log')
```

```
    return model
```

