An Introduction to Deep Learning With Python

[3.1] Anatomy of a neural network

Prof. Yuzo Iano

pgs: 59 - 63

Layers: the building blocks of deep learning

In [1]:
```
from keras import layers

layer = layers.Dense(32, input_shape=(784,))
```

```
Using TensorFlow backend.
```

In [2]:
```
from keras import layers
from keras import models

model = models.Sequential()
model.add(layers.Dense(32, input_shape=(784,)))
model.add(layers.Dense(32))
model.summary()
```

```
WARNING:tensorflow:From C:\Users\pablo\AppData\Roaming\Python\Python36\site-packages
\tensorflow\python\framework\op_def_library.py:263: colocate_with (from tensorflow.py
thon.framework.ops) is deprecated and will be removed in a future version.
Instructions for updating:
Colocations handled automatically by placer.
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
dense_2 (Dense)              (None, 32)                25120
_________________________________________________________________
dense_3 (Dense)              (None, 32)                1056
=================================================================
Total params: 26,176
Trainable params: 26,176
Non-trainable params: 0
_________________________________________________________________
```

Developing with Keras: a quick overview

In [3]:
```
from keras import models
from keras import layers

model = models.Sequential()
model.add(layers.Dense(32, activation='relu', input_shape=(784,)))
model.add(layers.Dense(10, activation='softmax'))
model.summary()
```

```
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
dense_4 (Dense)              (None, 32)                25120
_________________________________________________________________
dense_5 (Dense)              (None, 10)                330
=================================================================
Total params: 25,450
Trainable params: 25,450
Non-trainable params: 0
_________________________________________________________________
```

In [4]:
```
input_tensor = layers.Input(shape=(784,))
x = layers.Dense(32, activation='relu')(input_tensor)
output_tensor = layers.Dense(10, activation='softmax')(x)

model = models.Model(inputs = input_tensor, outputs=output_tensor)
```

In [5]:
```
from keras import optimizers

model.compile(optimizer=optimizers.RMSprop(lr=0.001),
              loss='mse',
              metrics=['accuracy'])
```

In [ ]:
```
#Code example
model.fit(input_tensor, target_tensor, batch_size=128, epochs=10)
```

Pablo Minango

- pablodavid218@gmail.com