2-imdb

April 23, 2024

[14]:
```
from tensorflow.keras.datasets import imdb
```

[15]:
```
(train_data, train_label), (test_data, test_label) = imdb.load_data(num_words =␣
↪10000)
```

```
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-
datasets/imdb.npz
17464789/17464789 [==============================] - 0s 0us/step
```

[24]:
```
import numpy as np

def vectorize_sequences(sequences, dimensions = 10000):
  results = np.zeros((len(sequences), dimensions))
  for i,sequences in enumerate(sequences):
    results[i, sequences] = 1
  return results

x_train = vectorize_sequences(train_data)
y_train = vectorize_sequences(test_data)
```

[25]:
```
y_train = np.asarray(train_label).astype('float32')
y_test = np.asarray(test_label).astype('float32')
```

[31]:
```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
```

[19]:
```
model = Sequential()
model.add(Dense(16, input_shape=(10000, ), activation = "relu"))
model.add(Dense(16, activation = "relu"))
model.add(Dense(1, activation = "sigmoid"))
```

[32]:
```
model.compile(optimizer='adam', loss = 'mse', metrics = ['accuracy'])
```

[22]:
```
model.summary()
```

```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
```

```
=================================================================
 dense (Dense)               (None, 16)                160016

 dense_1 (Dense)             (None, 16)                272

 dense_2 (Dense)             (None, 1)                 17

=================================================================
Total params: 160,305
Trainable params: 160,305
Non-trainable params: 0
_________________________________________________________________
```

[33]:
```
history = model.fit(x_train, y_train, validation_split = 0.3, epochs = 20,␣
↪verbose = 1, batch_size = 512)
```

```
Epoch 1/20
35/35 [==============================] - 2s 39ms/step - loss: 0.0041 - accuracy:
0.9960 - val_loss: 0.1162 - val_accuracy: 0.8652
Epoch 2/20
35/35 [==============================] - 1s 35ms/step - loss: 0.0042 - accuracy:
0.9959 - val_loss: 0.1171 - val_accuracy: 0.8648
Epoch 3/20
35/35 [==============================] - 1s 32ms/step - loss: 0.0043 - accuracy:
0.9958 - val_loss: 0.1192 - val_accuracy: 0.8636
Epoch 4/20
35/35 [==============================] - 1s 31ms/step - loss: 0.0042 - accuracy:
0.9959 - val_loss: 0.1210 - val_accuracy: 0.8619
Epoch 5/20
35/35 [==============================] - 1s 31ms/step - loss: 0.0041 - accuracy:
0.9960 - val_loss: 0.1208 - val_accuracy: 0.8628
Epoch 6/20
35/35 [==============================] - 1s 42ms/step - loss: 0.0041 - accuracy:
0.9959 - val_loss: 0.1210 - val_accuracy: 0.8619
Epoch 7/20
35/35 [==============================] - 2s 47ms/step - loss: 0.0040 - accuracy:
0.9961 - val_loss: 0.1213 - val_accuracy: 0.8621
Epoch 8/20
35/35 [==============================] - 1s 31ms/step - loss: 0.0041 - accuracy:
0.9960 - val_loss: 0.1214 - val_accuracy: 0.8620
Epoch 9/20
35/35 [==============================] - 1s 32ms/step - loss: 0.0041 - accuracy:
0.9961 - val_loss: 0.1204 - val_accuracy: 0.8655
Epoch 10/20
35/35 [==============================] - 1s 32ms/step - loss: 0.0041 - accuracy:
0.9961 - val_loss: 0.1215 - val_accuracy: 0.8633
Epoch 11/20
35/35 [==============================] - 1s 37ms/step - loss: 0.0040 - accuracy:
```

```
0.9961 - val_loss: 0.1224 - val_accuracy: 0.8623
Epoch 12/20
35/35 [==============================] - 1s 32ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1223 - val_accuracy: 0.8617
Epoch 13/20
35/35 [==============================] - 1s 35ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1223 - val_accuracy: 0.8613
Epoch 14/20
35/35 [==============================] - 1s 36ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1223 - val_accuracy: 0.8616
Epoch 15/20
35/35 [==============================] - 1s 31ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1223 - val_accuracy: 0.8613
Epoch 16/20
35/35 [==============================] - 1s 38ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1224 - val_accuracy: 0.8611
Epoch 17/20
35/35 [==============================] - 2s 48ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1224 - val_accuracy: 0.8607
Epoch 18/20
35/35 [==============================] - 1s 37ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1224 - val_accuracy: 0.8608
Epoch 19/20
35/35 [==============================] - 1s 35ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1224 - val_accuracy: 0.8605
Epoch 20/20
35/35 [==============================] - 2s 60ms/step - loss: 0.0039 - accuracy:
0.9961 - val_loss: 0.1224 - val_accuracy: 0.8609
```