

```
In [1]: # Импорт библиотек
from __future__ import absolute_import, division, print_function, unicode_literals
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import tensorflow as tf
from tensorflow.keras import layers, models
from tensorflow import feature_column
```

```
In [2]: # Путь до списка признаков
path_features_file = r"./har_dataset/features.txt"

# Функция, возвращающая список признаков из файла
def features_string(path_features_file):
    features_dict = {}
    with open(path_features_file) as file:
        for line in file:
            key, *value = line.split()
            features_dict[key] = value
    string = ""
    for i in range(1, 562):
        string = string + (features_dict[str(i)])[0] + " "
    return(string)
```

```
In [3]: # Получаем список признаков
string = features_string(path_features_file)
features = string.split(' ')
del features[561]

# Создание слоя признаков
feature_columns = [] # Столбцы признаков
for header in range(0, 561):
    feature_columns.append(feature_column.numeric_column((features[header])))
feature_layer = tf.keras.layers.DenseFeatures(feature_columns) # Слой признаков
```

```
In [4]: # Создание модели
model = tf.keras.Sequential([
    feature_layer,
    layers.Dense(128, activation=tf.nn.relu),
    layers.Dense(128, activation=tf.nn.relu),
    layers.Dense(6, activation=tf.nn.softmax)
])

# Компиляция модели
model.compile(optimizer='adam', loss='sparse_categorical_crossentropy', metrics=['accuracy'], run_eagerly=True)
```

```
In [5]: # Загрузка модели
checkpoint_path = r"./checkpoint/cp.ckpt"
model.load_weights(checkpoint_path)
```

Out[5]: <tensorflow.python.training.tracking.util.CheckpointLoadStatus at 0xde15aaffd0>

```
In [6]: # Тот самый массив с тестовыми данными
# (да, я его просто скопировал, потому что писать обёртку скрипта мне было лень)
a = np.array([8.97930057e-03, 1.79586011e-02, 8.88950757e-01, 8.45941089e-17,
1.69188218e-16, 2.85804694e-15, 1.00304140e-16, 2.00608280e-16,
2.46902498e-15, 8.97930057e-03, 1.79586011e-02, 8.88950757e-01,
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2.70616862e-16, 3.33066907e-15, 5.54517744e-01, 5.54517744e-01,
5.54517744e-01, -8.00000001e-04, 1.00000000e-03, -8.00000018e-04,
4.00000036e-04, -8.00000073e-04, 1.00000000e-03, -8.00000073e-04,
4.00000146e-04, -8.00178191e-04, 1.00000000e-03, -8.00178191e-04,
4.00356550e-04, 2.06811195e-02, 1.02371542e+00, 2.04743084e+00,
9.97700064e-04, 1.99540013e-03, 9.87723063e-02, 4.48315163e-19,
8.96630325e-19, 1.39049725e-17, 0.00000000e+00, 0.00000000e+00,
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7.49547282e-14, 6.22103298e-15, 1.24420660e-14, 2.09883353e-13,
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3.55879524e-04, 3.64225891e-04, 2.81989418e-04, 2.13428192e-04,
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7.61016180e-03, 1.40630867e-02, 3.3774955e-04, 9.81643641e-03,
5.36259010e-01, 1.64699231e-01, 1.40630867e-02, 8.61631893e-01,
1.06156213e-01, 3.77221140e-01, 4.37159556e-01, 7.97026379e-02,
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5.34504649e-01, 4.98962042e-01, 1.00000000e+00, 9.96291870e-01,
-2.74748519e-01, 5.42079378e-02, 1.00984346e-02, 2.01968691e-02,
9.99745022e-01])
```

```
In [7]: # Фокусы по превращению массива и строки в данные для нейросети
ds = pd.DataFrame(data=[a], index=np.arange(0, 561), columns=features)
ds_input = tf.data.Dataset.from_tensor_slices((dict(s)))
ds_input = ds_input.batch(32)
```

```
In [8]: # Предсказание по данным
class_names = ['WALKING', 'WALKING_UPSTAIRS', 'WALKING_DOWNSTAIRS', 'SITTING', 'STANDING', 'LAYING']
predict = model.predict(ds_input)
predicted_id = np.argmax(predict)
predicted_class_name = class_names[predicted_id]
print(predicted_class_name)
```

WARNING:tensorflow:Layer dense_features is casting an input tensor from dtype float64 to the layer's dtype of float32, which is new behavior in TensorFlow 2. The layer has dtype float32 because it's dtype defaults to floatx.

If you intended to run this layer in float32, you can safely ignore this warning. If in doubt, this warning is likely only an issue if you are porting a TensorFlow 1.X model to TensorFlow 2.

To change all layers to have dtype float64 by default, call `tf.keras.backend.set_floatx('float64')`. To change just this layer, pass dtype='float64' to the layer constructor. If you are the author of this layer, you can disable autocasting by passing a utocast=False to the base Layer constructor.

LAYING

In []: