Кобенко Влад 8382 пр6 вар.1

Подключение библиотек и файла var1.py

```
import numpy as np
import var1
import matplotlib.pyplot as plt
from tensorflow.keras.layers import Dense, Dropout, Flatten, Conv2D, MaxPooling2D
from tensorflow.keras.models import Sequential
from sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import train_test_split
from sklearn.utils import shuffle
```

Модель:

```
def build_model():
    model = Sequential()
    model.add(Conv2D(32, kernel_size=(3, 3),activation='relu',input_shape=(25,25,1)))
    model.add(MaxPooling2D(pool_size=(2, 2)))
    model.add(Dropout(0.25))
    model.add(Flatten())
    model.add(Dense(64, activation='relu'))
    model.add(Dense(32, activation='relu'))
    model.add(Dense(1, activation='sigmoid'))
    model.compile(loss='binary_crossentropy',optimizer= 'adam',metrics=['accuracy'])
    return model
```

Обучение модели:

```
if __name__ == '__main__':
    model = build_model()
    train_x, train_y, test_x, test_y = get_data()
    history = model.fit(train_x, train_y, batch_size=35, epochs=50,verbose=1,validation_data=(test_x,test_y))
    plots(history)
    model.evaluate(test_x, test_y)
```

Работа программы:

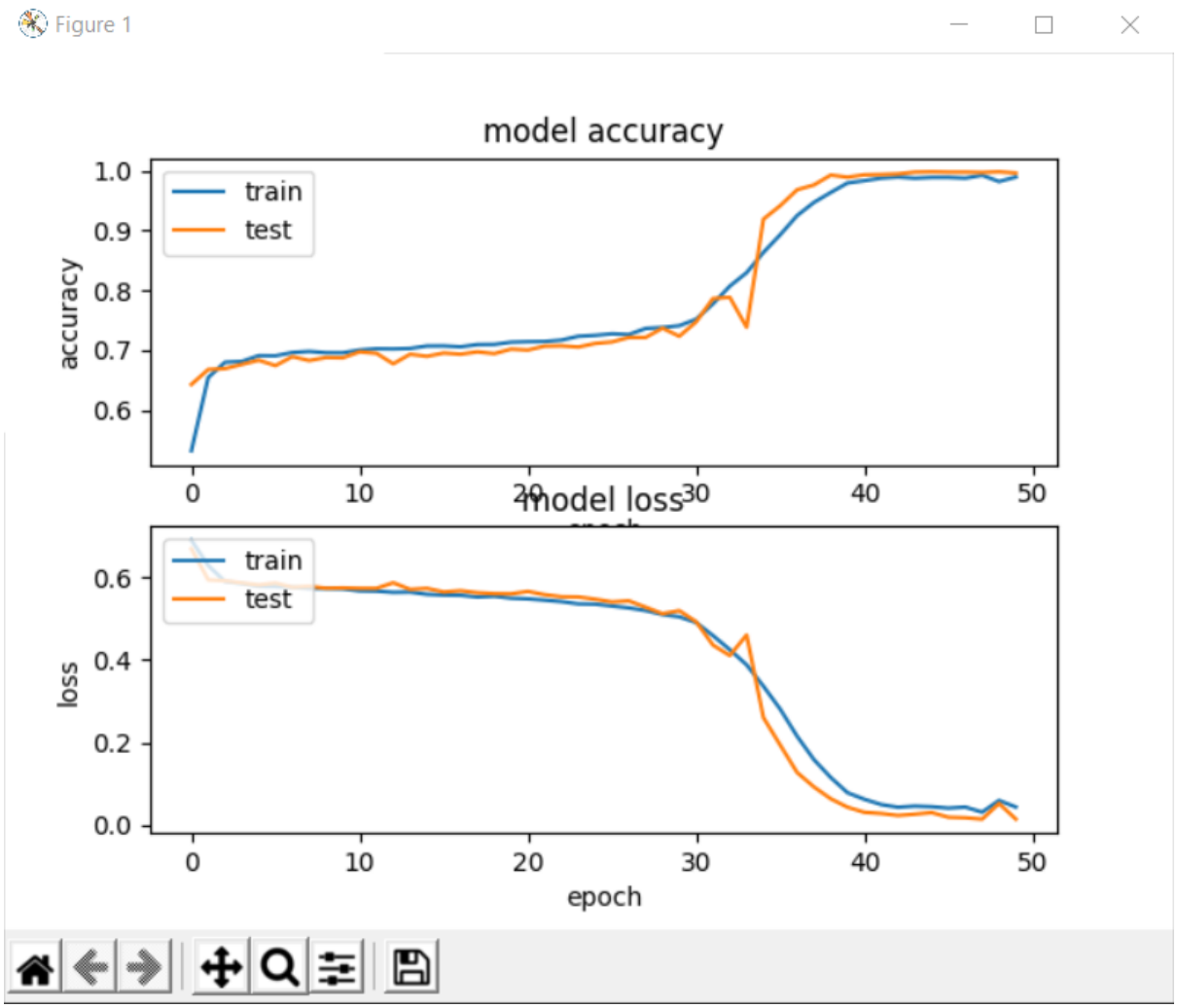
Figure 1
model accuracy
accuracy
train
test
1.0
0.9
0.8
0.7
0.6
0
10
20
30
40
50
model loss
loss
train
test
0.6
0.4
0.2
0.0
0
10
20
30
40
50
epoch