USER MANUAL FOR TRAFFIC SIGN RECOGNITION TOOL

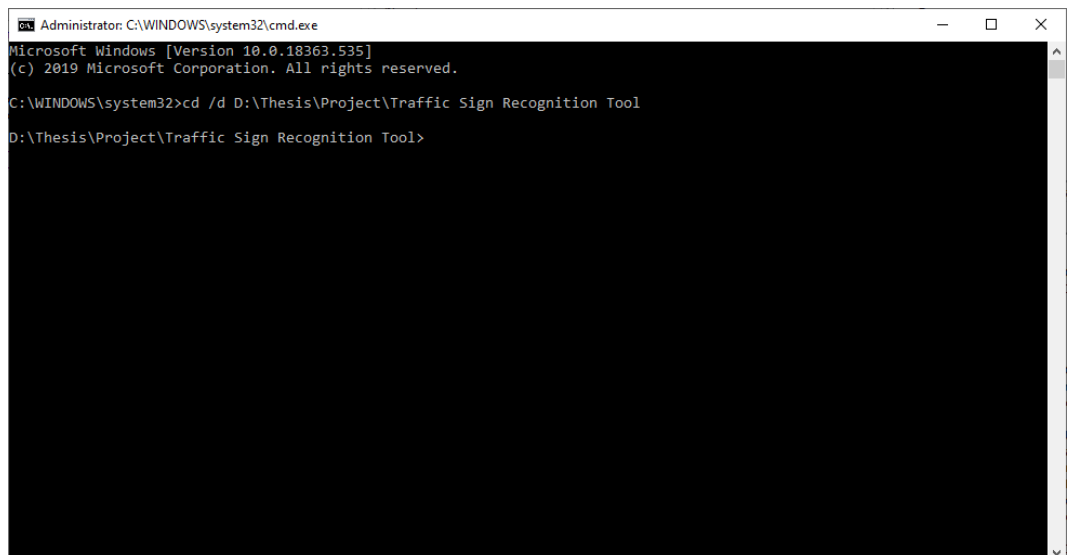**Environment requirement prerequisite:**

- Windows 10 (x64)

- Available disk space: ~ 500 MB

- RAM: 8 GB (recommendation)

- Anaconda Navigator 1.9.7, Jupyter Notebook 6.0.2, Spyder environment 4.0.0 and Python 3.7.5.

- Modules: TensorFlow 2.0.0, OpenCV 4.1.2, NumPy 1.17.4, Pandas 0.25.3, Matplotlib 3.1.2, Keras 2.3.1 and ski-learn 0.21.3.

There are 2 main parts:

- Train model
- Recognize traffic sign

1. Train model

- Step 1: Open Jupyter Notebook. Go to Command Prompt (cmd), enter < source code directory > in command: "cd /d <source code directory>

- Step 2: Enter "jupyter notebook" then press "Enter". The Jupyter Notebook UI appears.

- Step 3: Choose "train_model_by_KFold.ipynb" file.
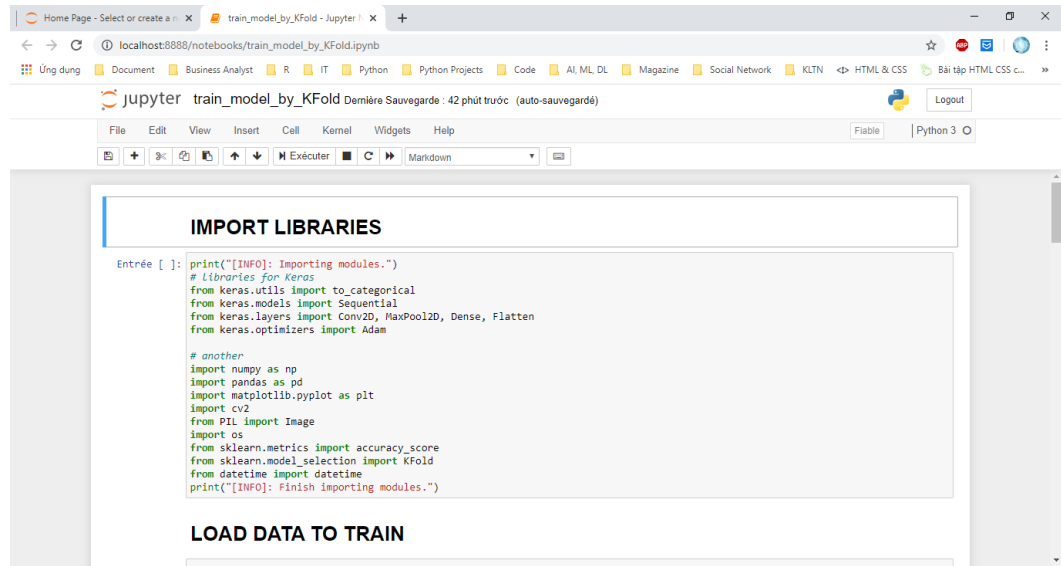
- Step 4: Click on "Kernel" menu and choose "Restart & Run All".
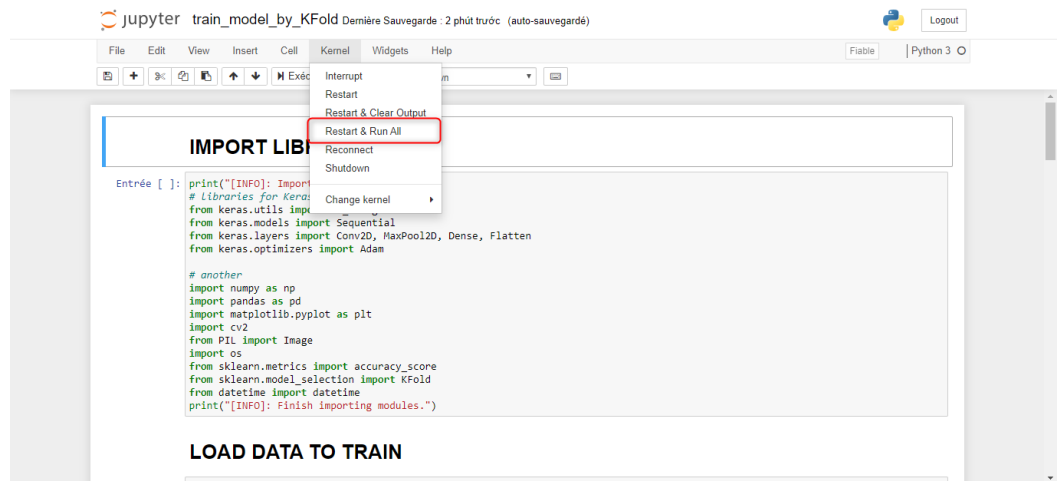
After finishing training, you will have the summary and model saved in "model" folder in source code directory as below:

```
[INFO]: SUMMARY:
[INFO]: Model 1 accuracy: 0.920665083135392
[INFO]: Model 2 accuracy: 0.8573238321456849
[INFO]: Model 3 accuracy: 0.8729216152019003
[INFO]: Model 4 accuracy: 0.8453681710213776
[INFO]: Model 5 accuracy: 0.8832937450514647
--------------------
[INFO]: Average accuracy: 0.8759144893111639
[INFO]: Highest accuracy: 0.920665083135392

Text(0.5, 0, 'Accuracy')
```
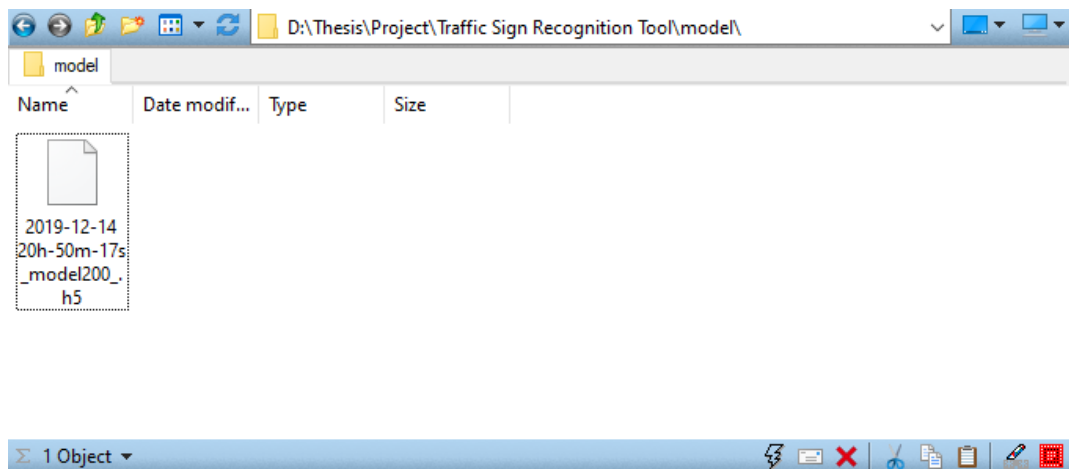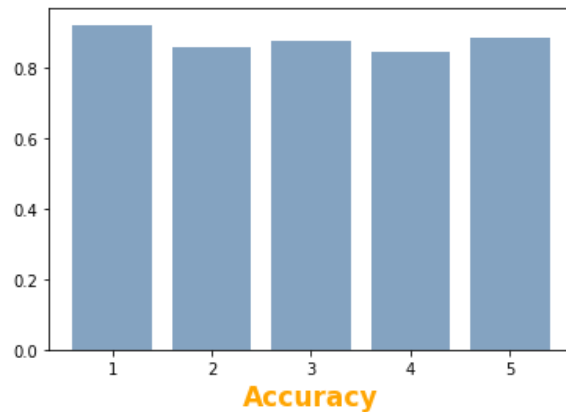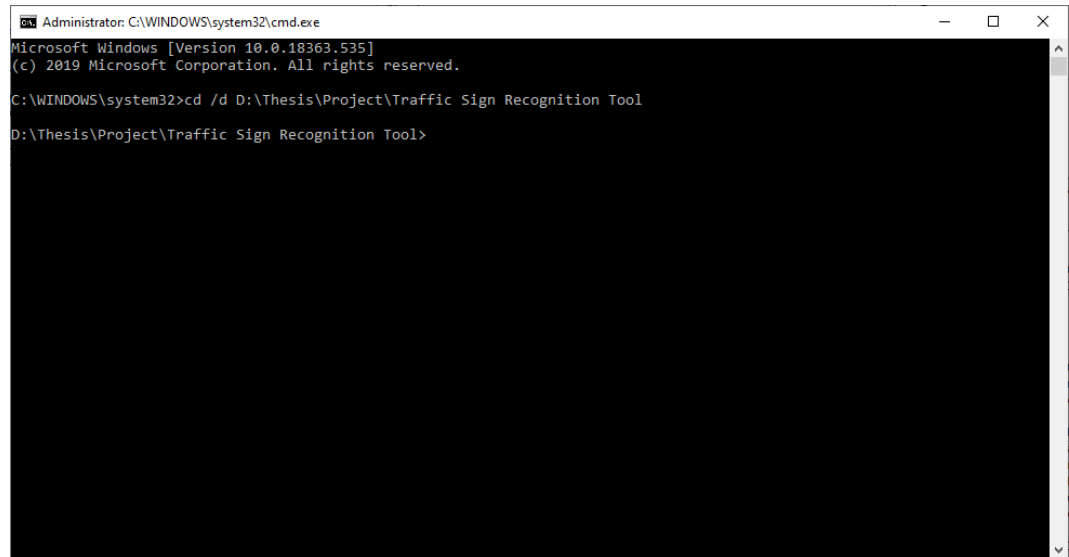
Accuracy

D:\Thesis\Project\Traffic Sign Recognition Tool\model\

model

Name	Date modif...	Type	Size

2019-12-14
20h-50m-17s
model200.
h5

Σ 1 Object ▾

2. Recognize traffic sign

Note: Please use the images from the "input" folder or "predict" folder placed in the source code directory for more accuracy.
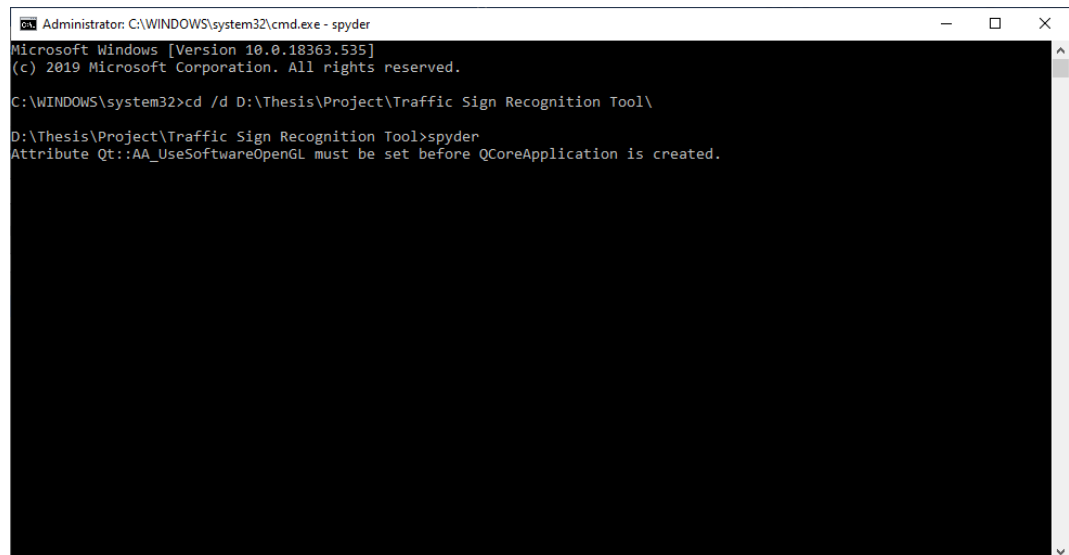
- Step 1: Open Jupyter Notebook. Go to Command Prompt (cmd), enter < source code directory > in command: "cd /d <source code directory>

- Step 2: Enter "spyder" then press "Enter". The Spyder UI appears.

- Step 3: Run main.py file. The Traffic Sign Recognition Tool UI appears.
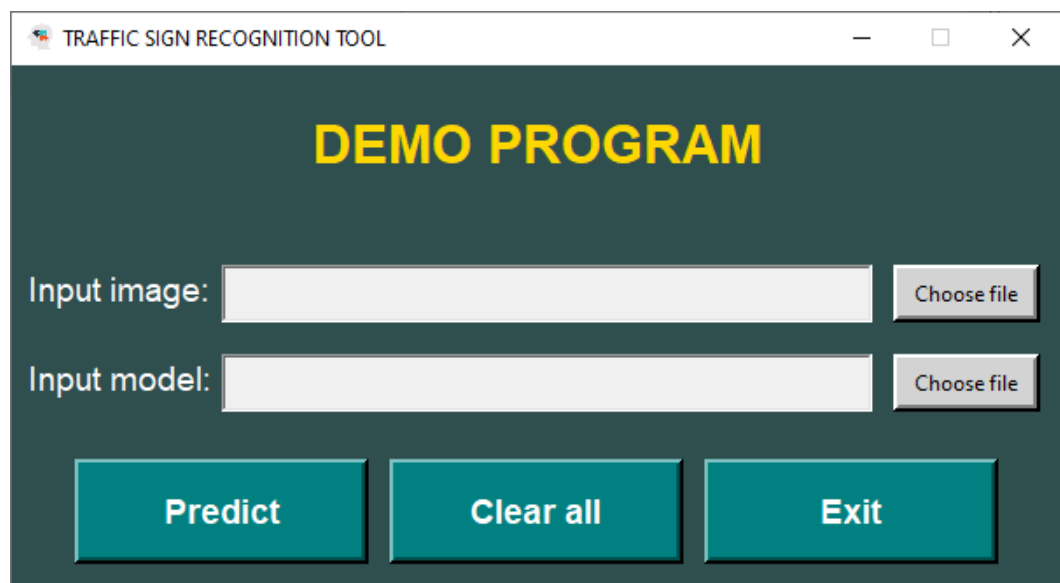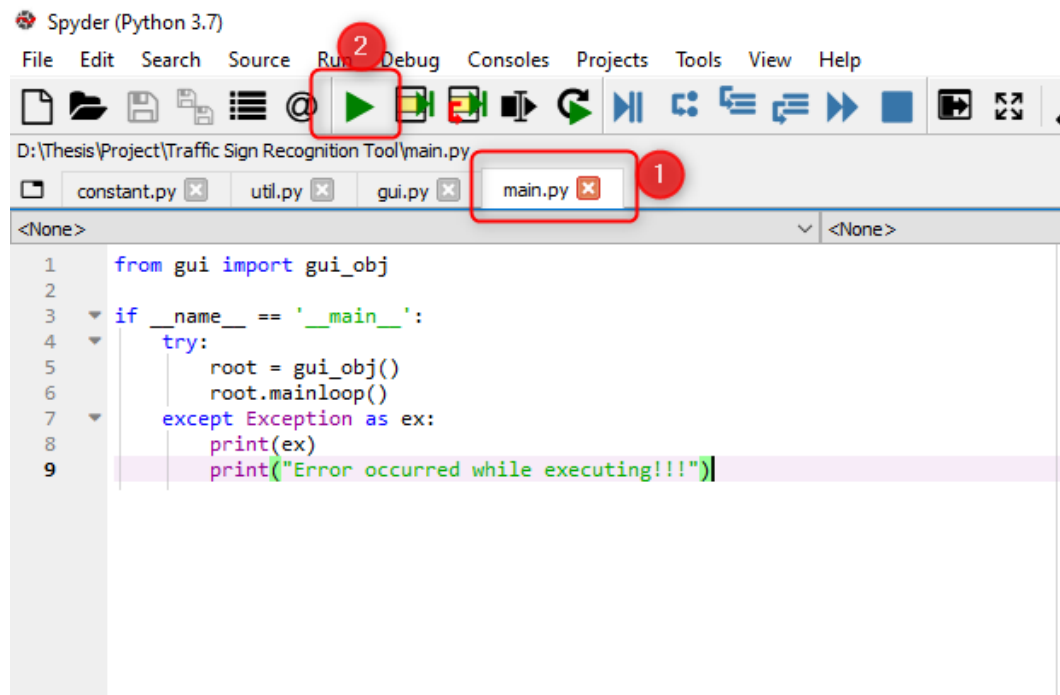
- Step 4: Choose input image and input model.
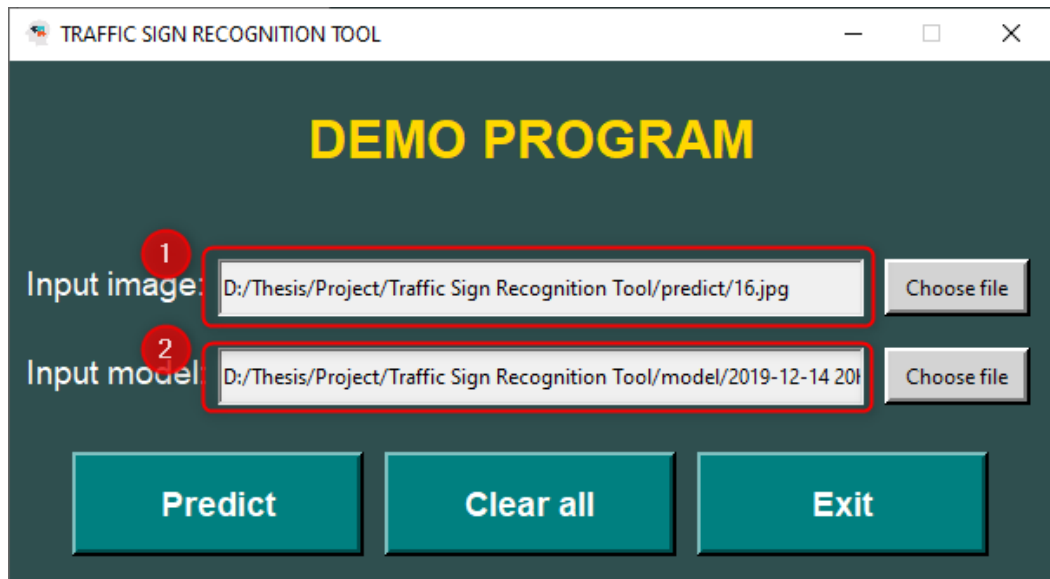
- Step 5: Click on "Predict" button. The result will be shown on the screen. You can check the "result" folder in the source code directory for more information.

Result of prediction: Bumpy road, Ahead only

x=832.046   y=299.982   [84, 131, 247]

Thesis\Project\Traffic Sign Recognition Tool\result\2020-01-03 08h-13m-52s\

2020-01-03 08h-13 ...

Name	Date modified	Type	Size

BIN_IMAGE...
road- Ahea...

PREDICTED...
road- Ahea...

RECTS_IM...
road- Ahea...

Σ 3 Objects ▾