INT-247 PROJECT

TOPIC: HUMAN ACTIVITY RECOGNITION

Submitted By:

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SUBMITTED TO:

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SECTION: KM031

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Dataset:

Description: Kinetics is a large-scale, high-quality dataset of YouTube video URLs which include a diverse range of human focused actions. The dataset consists of approximately 300,000 video clips, and covers 400 human action classes with at least 400 video clips for each action class. Each clip lasts around 10s and is labelled with a single class. All of the clips have been through multiple rounds of human annotation, and each is taken from a unique YouTube video. The actions cover a broad range of classes including human-object interactions such as playing instruments, as well as human-human interactions such as shaking hands and hugging.

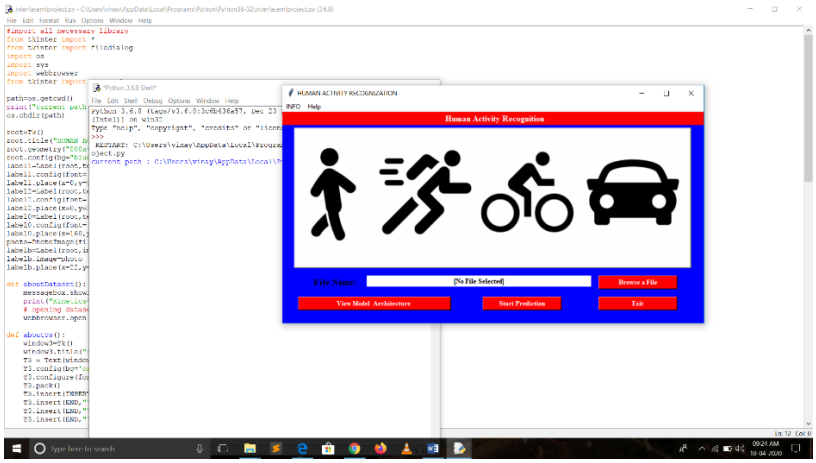
Number of Videos: 300000

Number of Classes: 400 (At least 400 video clips per class (downloaded via YouTube))

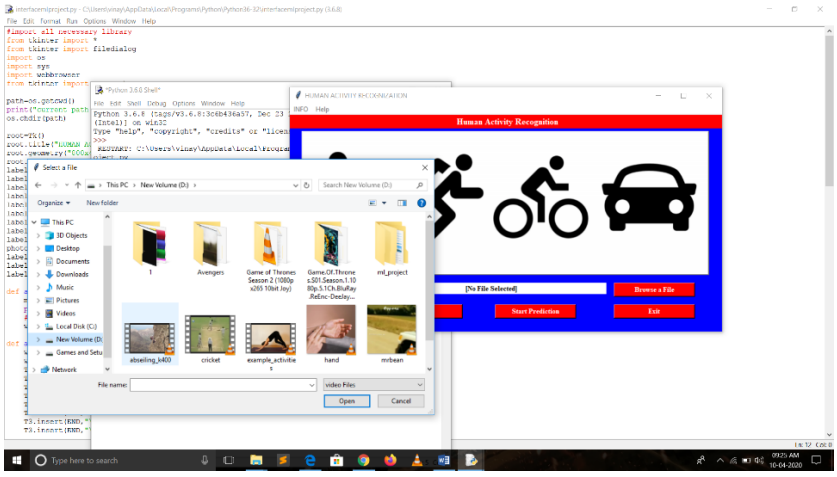
Dataset URL: https://deepmind.com/research/open-source/kinetics

Project:

Project GUI



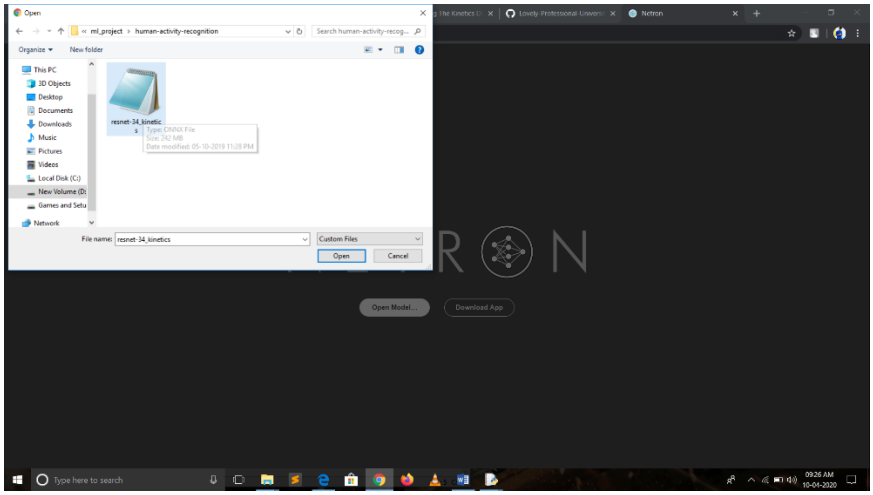
Click on "Browse a File" button to select a Video File for prediction from your local disk [select a video with at least 50sec long]

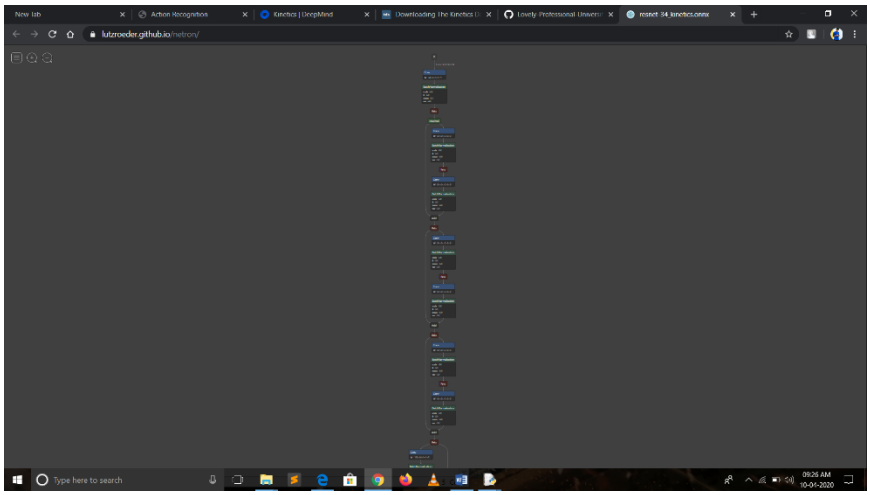


After selecting a File for prediction press "Start Prediction"

Click on "View Model Architecture" button to visualize a Model, now you will be directed to website of Netron select a model file having .onnx() extension (Open Neural Netwok Exchange)

You will see the model architecture with node details when clicked on a specified node





You can get Help like steps to run, steps to view model architecture

You can also get the Information regarding project.

About Files:

File name: interface_ml_project.py

This python file is where I created my GUI to execute the project

File name: human_activity_recognition.py

The python file in which the main program is made where it implement loading a model, loading the classes of Kinetics400 dataset, Accessing the video frame and finally prediction.

File name: action_recognition_kinetics.txt

The text file which has classes of kinetics400 dataset

File name: resnet-34_kinetics.onnx

Hara et al.'s pre-trained and serialized human activity recognition convolutional neural network trained on the Kinetics dataset.

All these files should be placed in a location where python is installed on your PC (as we are going to command prompt for execution).

Code:

All the code is explained using comment line in the python files.

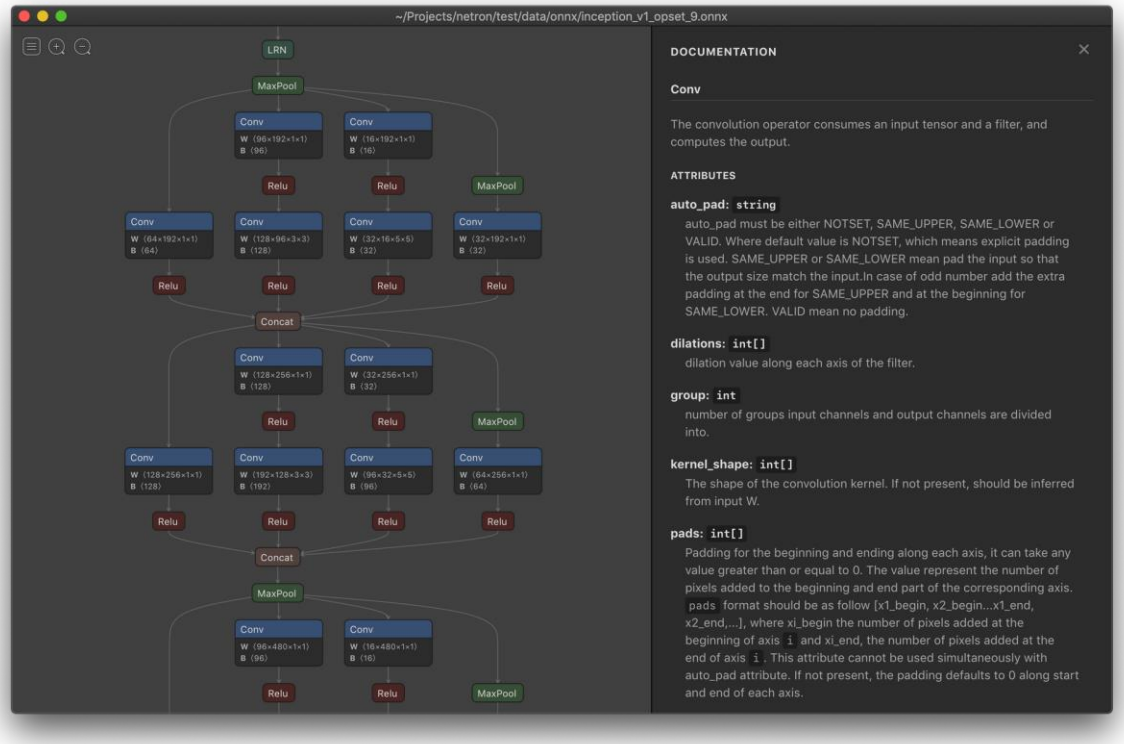
Git-hub repository link:

https://github.com/Lovely-Professional-University-CSE/int247-machine-learning-project-2020-kem031-34_vinay

Netron: Open-source Visualizer for Deep Learning, Machine Learning, and Neural Network Models

Netron is an open-source multi-platform visualizer and editor for artificial intelligence models. It supports many extensions for deep learning, machine learning and neural network models. Netron is using Electron/ NodeJS and it has a binary application release for Windows, Linux and macOS.

Netron is popular among data scientists, The project's page at Github received 6.8k stars and >800 forks.



Primary support

- ONNX (.onnx, .pb, .pbtxt)
- Keras (.h5, .keras)
- Core ML (.mlmodel)
- Caffe (.caffemodel, .prototxt)
- Caffe2 (predict_net.pb, predict_net.pbtxt)
- MXNet (.model, -symbol.json),
- NCNN (.param)
- TensorFlow Lite (.tflite)

Link: https://lutzroeder.github.io/netron/