An Ontology Detection Tool for EVTD

Install

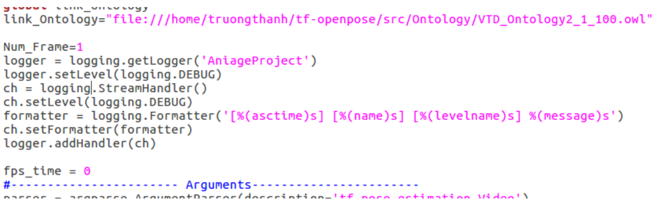
Dependencies

You need dependencies below.

- python3
- python3-tk
- tensorflow
- keras
- opencv
- protobuf
- scikit-learn
- owlready2
- tkinter
- json
- numpy
- pillow

Change Link of Ontology file:

link_Ontology="file:///home/truongthanh/tf-openpose/src/Ontology/VTD_Ontology2_1_100.owl"

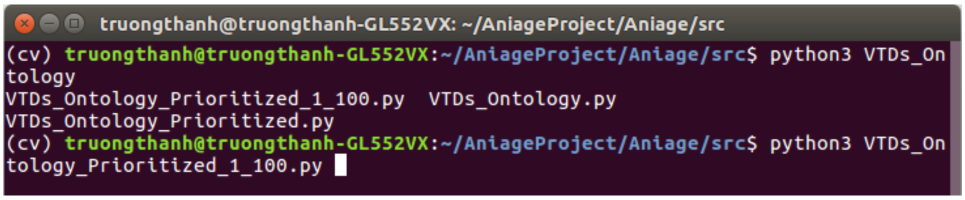


```
global link_Ontology
link_Ontology="file:///home/truongthanh/tf-openpose/src/Ontology/VTD_Ontology2_1_100.owl"

Num_Frame=1
logger = logging.getLogger('AniageProject')
logger.setLevel(logging.DEBUG)
ch = logging.StreamHandler()
ch.setLevel(logging.DEBUG)
formatter = logging.Formatter('[%(asctime)s] [%(name)s] [%(levelname)s] %(message)s')
ch.setFormatter(formatter)
logger.addHandler(ch)

fps_time = 0
#---------------------- Arguments----------------------
parser = argparse.ArgumentParser(description='tf-pose-estimation Video')
```

Create Ontology-based



```
truongthanh@truongthanh-GL552VX: ~/AniageProject/Aniage/src
(cv) truongthanh@truongthanh-GL552VX:~/AniageProject/Aniage/src$ python3 VTDs_On
tology
VTDs_Ontology_Prioritized_1_100.py  VTDs_Ontology.py
VTDs_Ontology_Prioritized.py
(cv) truongthanh@truongthanh-GL552VX:~/AniageProject/Aniage/src$ python3 VTDs_On
tology_Prioritized_1_100.py
```

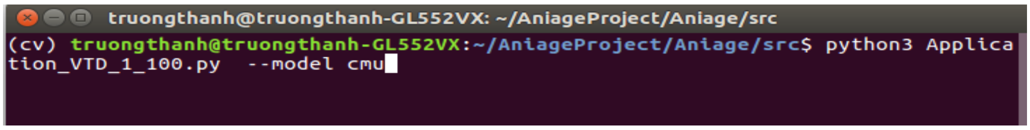
→ *python3 VTDs_Ontology_Prioritized_1_100.py*

Note that: there are 3 files to create Ontology:

- VTDs_Ontology.py → create EVTD’s Ontology-based
- VTDs_Ontology_Prioritized.py → create EVTD’s Prioritized Ontology (Priority: low, below average, average, above_average, high)
- VTDs_Ontology_Prioritized_1_100.py → create EVTD’s Prioritized Ontology (Probability: 1 – 100%)

VTDs_Ontology.py VTDs_Ontology_Prioritized.py VTDs_Ontology_Prioritized_1_100.py

Run tool



```
truongthanh@truongthanh-GL552VX: ~/AniageProject/Aniage/src
(cv) truongthanh@truongthanh-GL552VX:~/AniageProject/Aniage/src$ python3 Applica
tion_VTD_1_100.py  --model cmu
```

There are 2 files to run application:

- Application_VTD_1_100.py run application with EVTD’s Prioritized Ontology (Probability: 1 – 100%)
- run application with EVTD’s Prioritized Ontology (Priority: low, below average, average, above_average, high)

How to run

→ python3 Application_VTD_1_100.py --model cmu

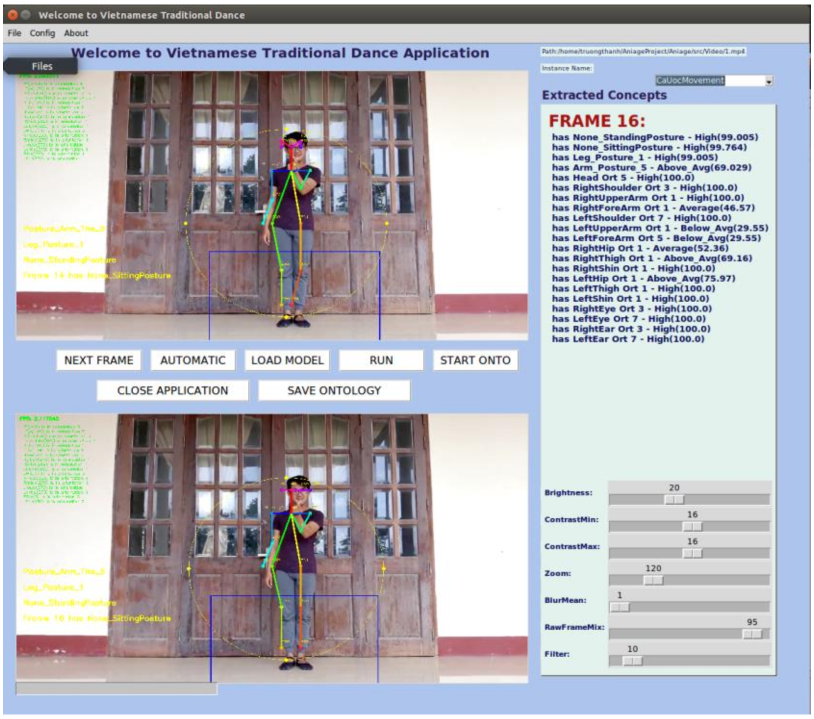
→ python3 Appication_VTD.py

Note that: --model: + cmu

+ mobilenet_thin

Application_VTD.py Application_VTD_1_100.py

Interface



Path:/home/truongthanh/AniageProject/Aniage/src/Video/1.mp4

Instance Name: CaUocMovement

Extracted Concepts

FRAME 16:

```
has None_StandingPosture - High(99.005)
has None_SittingPosture - High(99.764)
has Leg_Posture_1 - High(99.005)
has Arm_Posture_5 - Above_Avg(69.029)
has Head Ort 5 - High(100.0)
has RightShoulder Ort 3 - High(100.0)
has RightUpperArm Ort 1 - High(100.0)
has RightForeArm Ort 1 - Average(46.57)
has LeftShoulder Ort 7 - High(100.0)
has LeftUpperArm Ort 1 - Below_Avg(29.55)
has LeftForeArm Ort 5 - Below_Avg(29.55)
has RightHip Ort 1 - Average(52.36)
has RightThigh Ort 1 - Above_Avg(69.16)
has RightShin Ort 1 - High(100.0)
has LeftHip Ort 1 - Above_Avg(75.97)
has LeftThigh Ort 1 - High(100.0)
has LeftShin Ort 1 - High(100.0)
has RightEye Ort 3 - High(100.0)
has LeftEye Ort 7 - High(100.0)
has RightEar Ort 3 - High(100.0)
has LeftEar Ort 7 - High(100.0)
```

Brightness: 20

ContrastMin: 16

ContrastMax: 16

Zoom: 120

BlurMean: 1

RawFrameMix: 95

Filter: 10

- Firstly, we need to click “Load model” in order to load all the essential models (related on Machine learning models, CNNs architectural models, ontology model, ...)
- We modify online the parameters of preprocessing image with (Brightness, Contrast, Zoom…). Moreover, the tool supports automatic detection of concepts on sequence frames of a long video (Click Automatic and Run) as well as supporting for showing each frame to follow (Click NextFrame)
- Note that when we selected that frame to store into ontology, please click “Start Onto”. After finished the selections, we will click “save ontology” to store all of the information of each frame into ontology.
- Besides, we are also able to choose the class to store through combobox in the top-right-side