OpenVINO 2018 R5 Toolkit Installation Guide

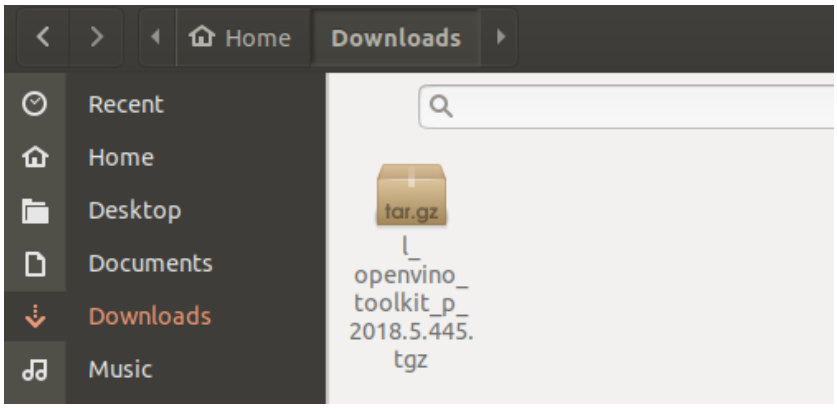
Here is the download link for OpenVINO 2018 R5 Toolkit:
http://registrationcenter-download.intel.com/akdlm/irc_nas/15013/l_openvino_toolkit_p_2018.5.445.tgz

I will guide you through the installation of toolkit, setup and running of demos (Testing pre-trained models). The guide will be split into three parts and one FAQ.

Part 1 – Installation of Toolkit
Part 2 – Verification of Toolkit Installation
Part 3 – Setup and running of Pedestrian Tracker Demo
FAQ – Pedestrian Tracker Demo Not Working

Part 1 - Installation of Toolkit

Your toolkit should be in the Downloads directory.



Unzip/Untar the toolkit

```
(base) student@ICDC61:~$ cd Downloads
(base) student@ICDC61:~/Downloads$ tar -xzf l_openvino_toolkit_p_2018.5.445.tgz
```

1. cd Downloads

2. tar -xzf l_openvino_toolkit_p_2018.5.445.tgz

Installing dependencies from toolkit

```
(base) student@ICDC61:~/Downloads$ cd l_openvino_toolkit_p_2018.5.445
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$ ll
total 100
drwxr-xr-x 4 student student  4096 Dec 14  2018 ./
drwxr-xr-x 3 student student  4096 Jul 15 09:55 ../
-rw-r--r-- 1 student student 42983 Dec 14  2018 EULA.txt
-rwxr-xr-x 1 student student  4767 Dec 14  2018 install_cv_sdk_dependencies.sh*
-rwxr-xr-x 1 student student   643 Dec 14  2018 install_GUI.sh*
-rwxr-xr-x 1 student student 19118 Dec 14  2018 install.sh*
drwxr-xr-x 6 student student  4096 Dec 14  2018 pset/
-rwxr-x--- 1 student student   975 Dec 14  2018 PUBLIC_KEY.PUB*
drwxr-xr-x 2 student student  4096 Dec 14  2018 rpm/
-rw-r--r-- 1 student student  2991 Dec 14  2018 silent.cfg
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$
```

Go inside toolkit directory, view all files and sudo install the dependencies

3. cd l_openvino_toolkit_p_2018.5.445

“ll” displays all files in a list format

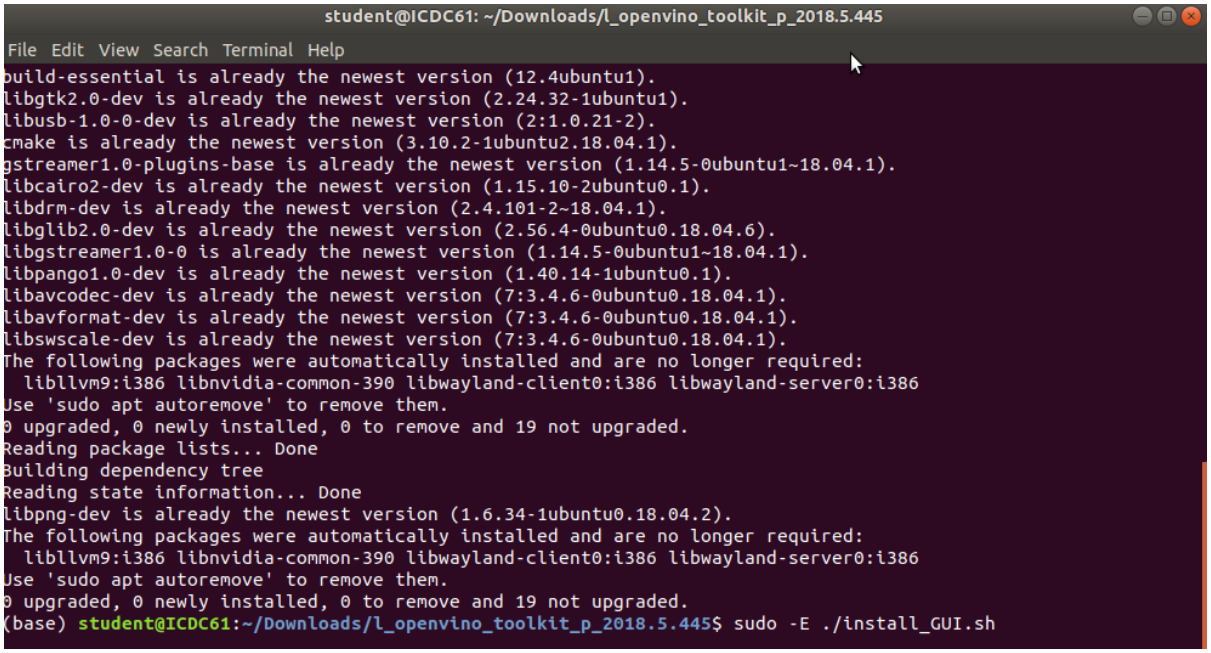
4. ll

```
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$ sudo -E ./install_cv_sdk_dependencies.sh
[sudo] password for student:

This script installs the following OpenVINO 3rd-party dependencies:
1. FFmpeg and GStreamer libraries required for OpenCV and Inference Engine
2. libusb library required for Myriad plugin for Inference Engine
3. build dependencies for OpenVINO samples

Get:1 http://dl.google.com/linux/chrome/deb stable InRelease [1,811 B]
Hit:2 http://ppa.launchpad.net/graphics-drivers/ppa/ubuntu bionic InRelease
Hit:3 https://download.docker.com/linux/ubuntu bionic InRelease
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Hit:5 http://id.archive.ubuntu.com/ubuntu bionic InRelease
Get:6 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [46.1 kB]
Get:7 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [49.2 kB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:9 http://id.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:10 http://id.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:11 http://id.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1,011 kB]
Get:12 http://id.archive.ubuntu.com/ubuntu bionic-updates/main i386 Packages [714 kB]
```

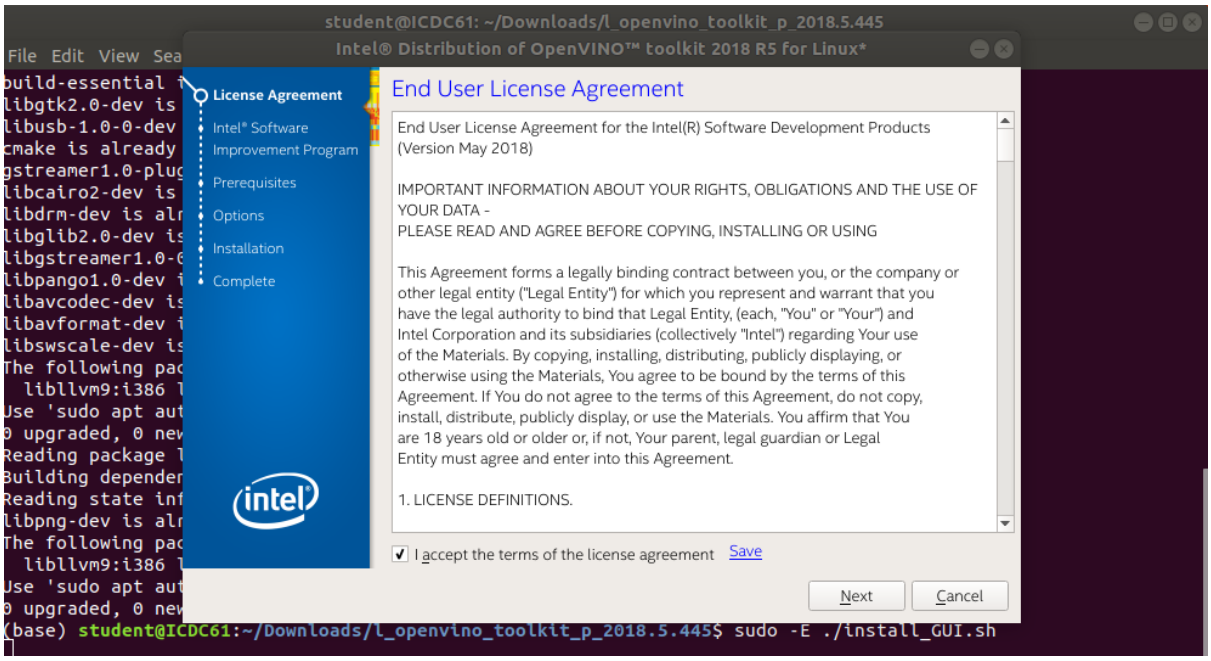
5. sudo -E ./install_cv_sdk_dependencies.sh

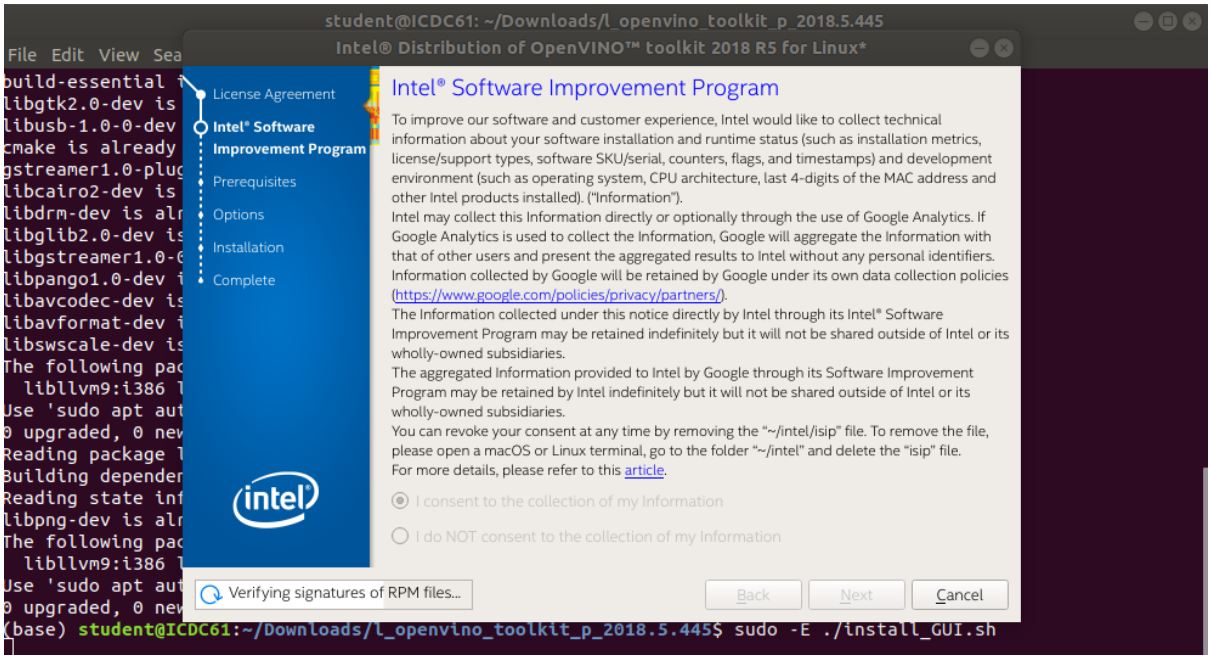
6. enter "student" when prompted for password

Installing GUI toolkit



7. sudo -E ./install_GUI.sh




student@ICDC61: ~/Downloads/l_openvino_toolkit_p_2018.5.445
File Edit View Sea
Intel® Distribution of OpenVINO™ toolkit 2018 R5 for Linux*
License Agreement
Intel® Software Improvement Program
Prerequisites
Options
Installation
Complete
Intel® Software Improvement Program
To improve our software and customer experience, Intel would like to collect technical information about your software installation and runtime status (such as installation metrics, license/support types, software SKU/serial, counters, flags, and timestamps) and development environment (such as operating system, CPU architecture, last 4-digits of the MAC address and other Intel products installed). ("Information").
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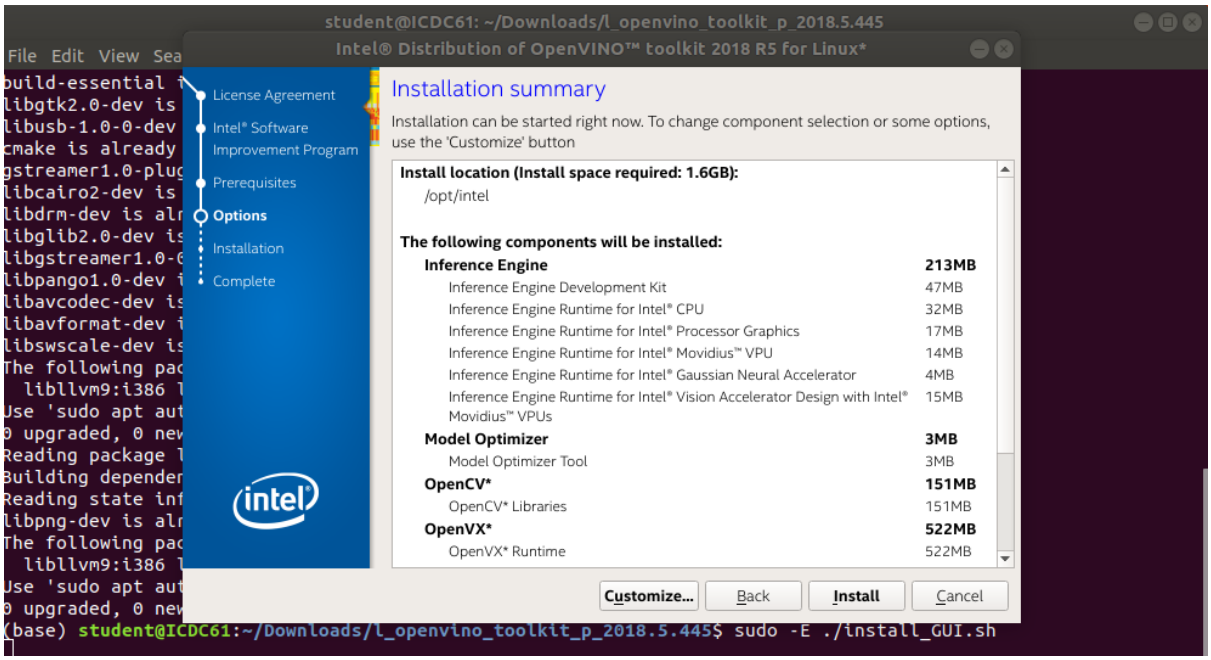
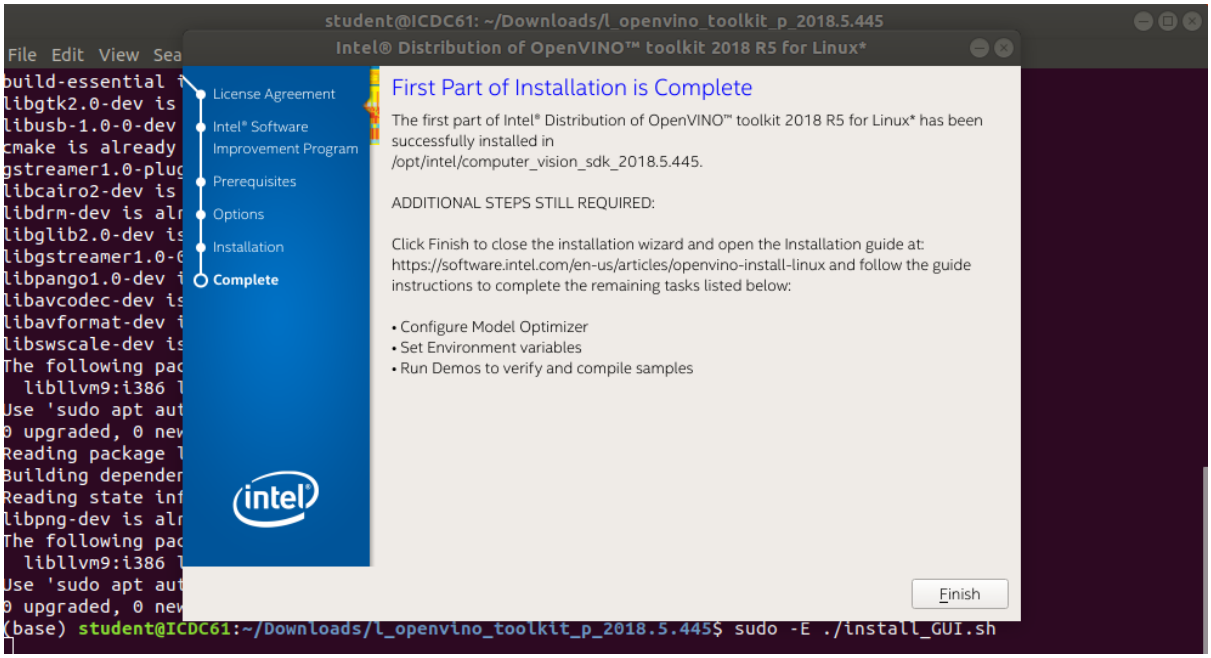
You can revoke your consent at any time by removing the "~/intel/isip" file. To remove the file, please open a macOS or Linux terminal, go to the folder "~/intel" and delete the "isip" file.
For more details, please refer to this article.
I consent to the collection of my Information
I do NOT consent to the collection of my Information
Verifying signatures of RPM files...
Back
Next
Cancel
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$ sudo -E ./install_GUI.sh


student@ICDC61: ~/Downloads/l_openvino_toolkit_p_2018.5.445
File Edit View Sea
Intel® Distribution of OpenVINO™ toolkit 2018 R5 for Linux*
License Agreement
Intel® Software Improvement Program
Prerequisites
Options
Installation
Complete
Installation summary
Installation can be started right now. To change component selection or some options, use the 'Customize' button
Install location (Install space required: 1.6GB):
/opt/intel
The following components will be installed:
Inference Engine 213MB
Inference Engine Development Kit 47MB
Inference Engine Runtime for Intel® CPU 32MB
Inference Engine Runtime for Intel® Processor Graphics 17MB
Inference Engine Runtime for Intel® Movidius™ VPU 14MB
Inference Engine Runtime for Intel® Gaussian Neural Accelerator 4MB
Inference Engine Runtime for Intel® Vision Accelerator Design with Intel® Movidius™ VPUs 15MB
Model Optimizer 3MB
Model Optimizer Tool 3MB
OpenCV* 151MB
OpenCV* Libraries 151MB
OpenVX* 522MB
OpenVX* Runtime 522MB
Customize...
Back
Install
Cancel
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$ sudo -E ./install_GUI.sh



8. click next, click install and complete installation

Activating OpenVINO environment (You can choose manual or auto activation, **auto is recommended**)

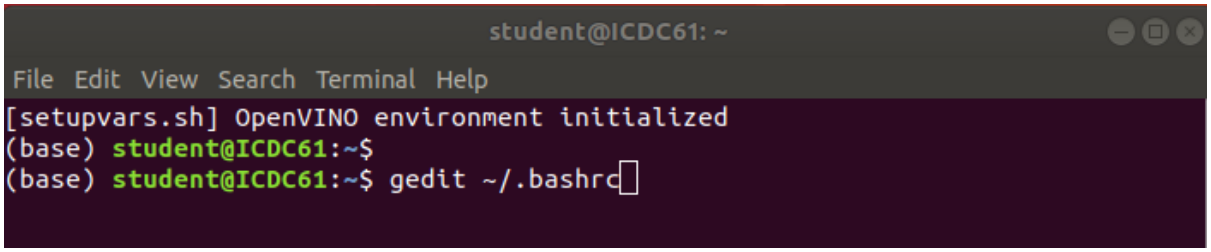
Without activating OpenVINO environment, you cannot run demos (Testing pre-trained model with image/video input)

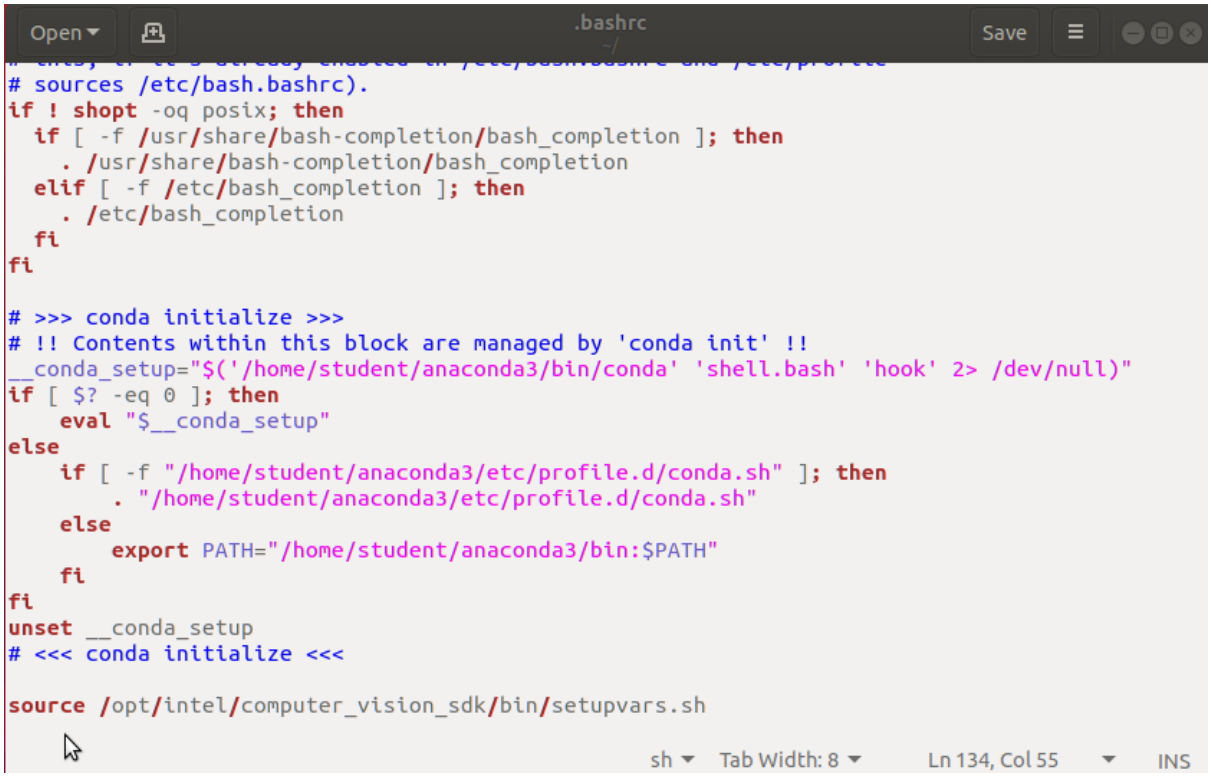
```
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$ cd /opt/intel/computer_vision_sdk
(base) student@ICDC61:/opt/intel/computer_vision_sdk$ source bin/setupvars.sh
[setupvars.sh] OpenVINO environment initialized
(base) student@ICDC61:/opt/intel/computer_vision_sdk$
```

Manual **(You must always remember to activate this manually after you open terminal)**

9. cd /opt/intel/computer_vision_sdk

10. source bin/setupvars.sh





Auto (Automatically activates every time you open terminal)

11. gedit ~/bashrc

*12. source /opt/intel/computer_vision_sdk/bin/setupvars.sh
***(Save the script and close terminal, open terminal again. Complete step 9 and continue from step 13 onwards)**
(Both manual and auto will prompt OpenVINO environment initialized)

Part 2 - Verification of Toolkit Installation

Two demo scripts (SqueezeNet Convert Demo & Security Camera Barrier Demo) will be run to verify the installation.

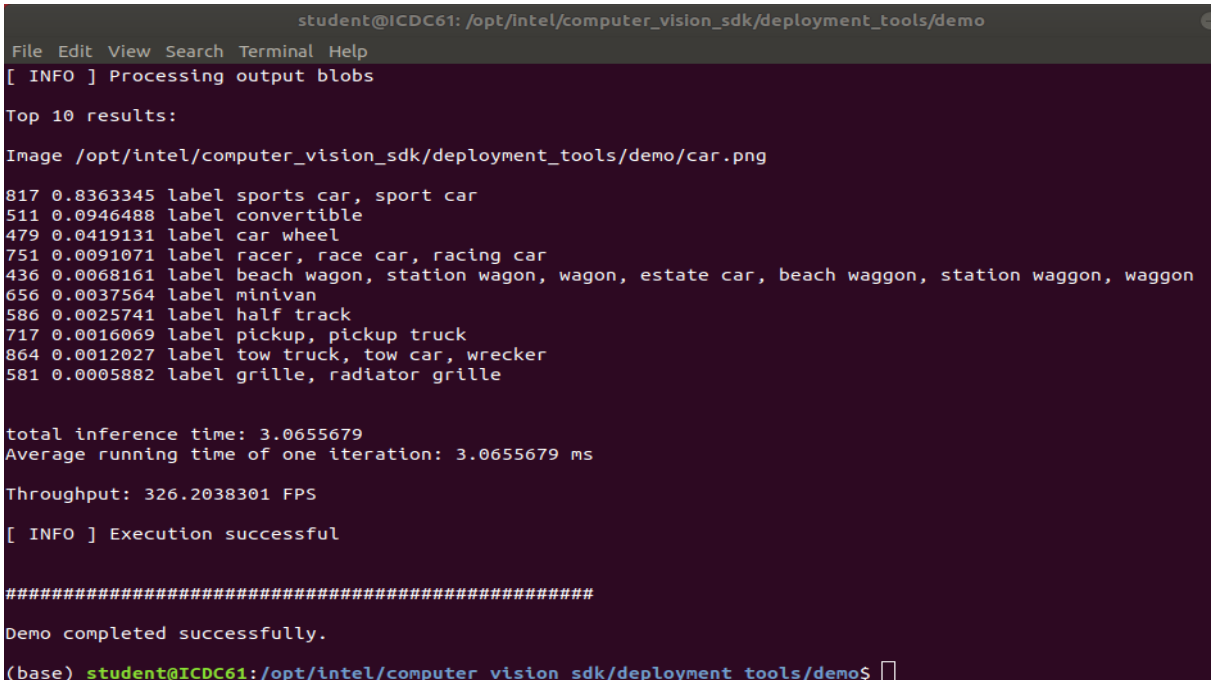
```
(base) student@ICDC61:~/Downloads/l_openvino_toolkit_p_2018.5.445$ cd /opt/intel/computer_vision_sdk
(base) student@ICDC61:/opt/intel/computer_vision_sdk$ source bin/setupvars.sh
[setupvars.sh] OpenVINO environment initialized
(base) student@ICDC61:/opt/intel/computer_vision_sdk$ cd deployment_tools/demo/
(base) student@ICDC61:/opt/intel/computer_vision_sdk/deployment_tools/demo$ ll
total 1760
drwxr-xr-x  2 root root    4096 Jul 15 10:02 ./
drwxr-xr-x 10 root root    4096 Jul 15 10:02 ../
-rw-r--r--  1 root root 1432032 Jul 15 10:02 car_1.bmp
-rw-r--r--  1 root root  310725 Jul 15 10:02 car.png
-rwxr-xr-x  1 root root    6472 Jul 15 10:02 demo_security_barrier_camera.sh*
-rwxr-xr-x  1 root root    8605 Jul 15 10:02 demo_squeezenet_download_convert_run.sh*
-rw-r--r--  1 root root    2933 Jul 15 10:02 README.txt
-rw-r--r--  1 root root   21675 Jul 15 10:02 squeezenet1.1.labels
(base) student@ICDC61:/opt/intel/computer_vision_sdk/deployment_tools/demo$
```

13. cd deployment_tools/demo/

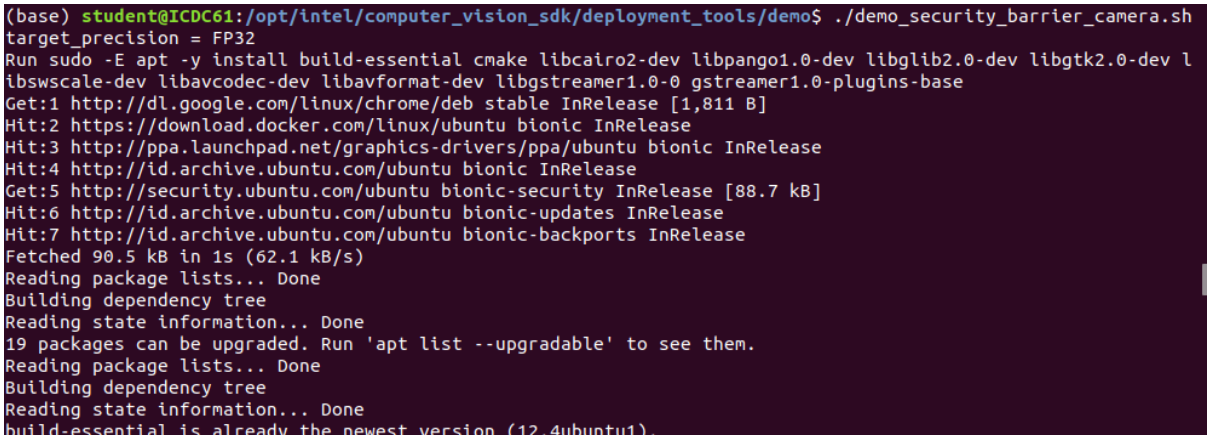
14. ll

```
(base) student@ICDC61:/opt/intel/computer_vision_sdk/deployment_tools/demo$ ./demo_squeezenet_download_conver
t_run.sh
target_precision = FP32


################################################



Downloading the Caffe model and the prototxt
Installing dependencies
Run sudo -E apt -y install build-essential python3-pip virtualenv cmake libcairo2-dev libpango1.0-dev libglib
2.0-dev libgtk2.0-dev libswscale-dev libavcodec-dev libavformat-dev libgstreamer1.0-0 gstreamer1.0-plugins-ba
se
Get:1 http://dl.google.com/linux/chrome/deb stable InRelease [1,811 B]
Hit:2 https://download.docker.com/linux/ubuntu bionic InRelease
Hit:3 http://ppa.launchpad.net/graphics-drivers/ppa/ubuntu bionic InRelease
```

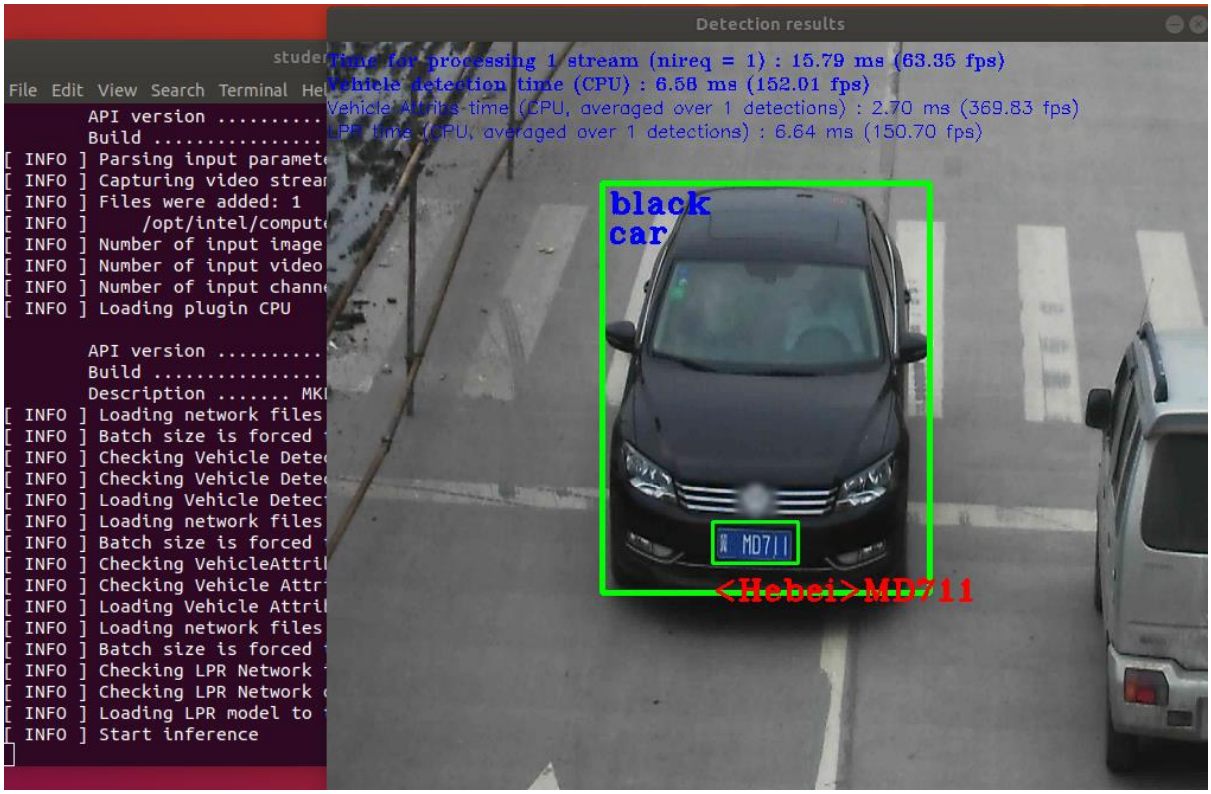
15. ./demo_squeezenet_download_convert_run.sh



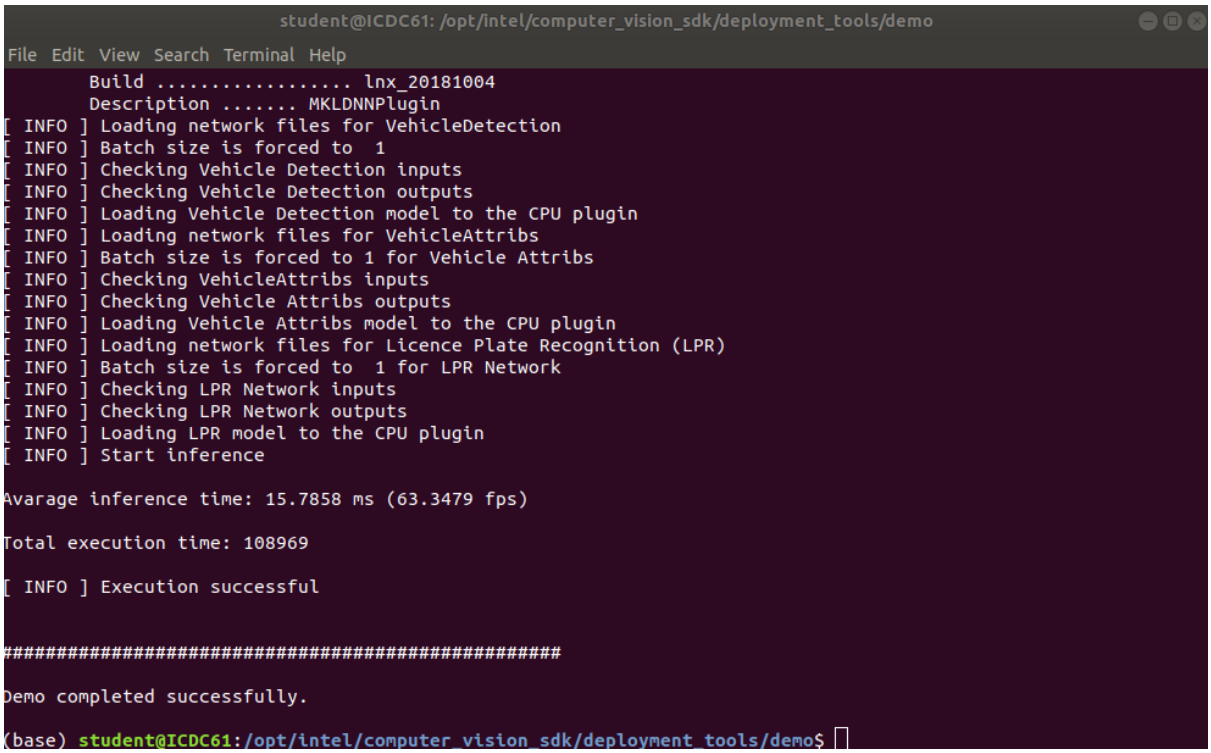
16. Demo will run and show top 10 results of car.png with predicted probabilities



17. ./demo_security_barrier_camera.sh



18. Demo will run and popup car image with red and green bounding box around car and license plate



19. When image popup is closed, terminal will show demo completed successfully

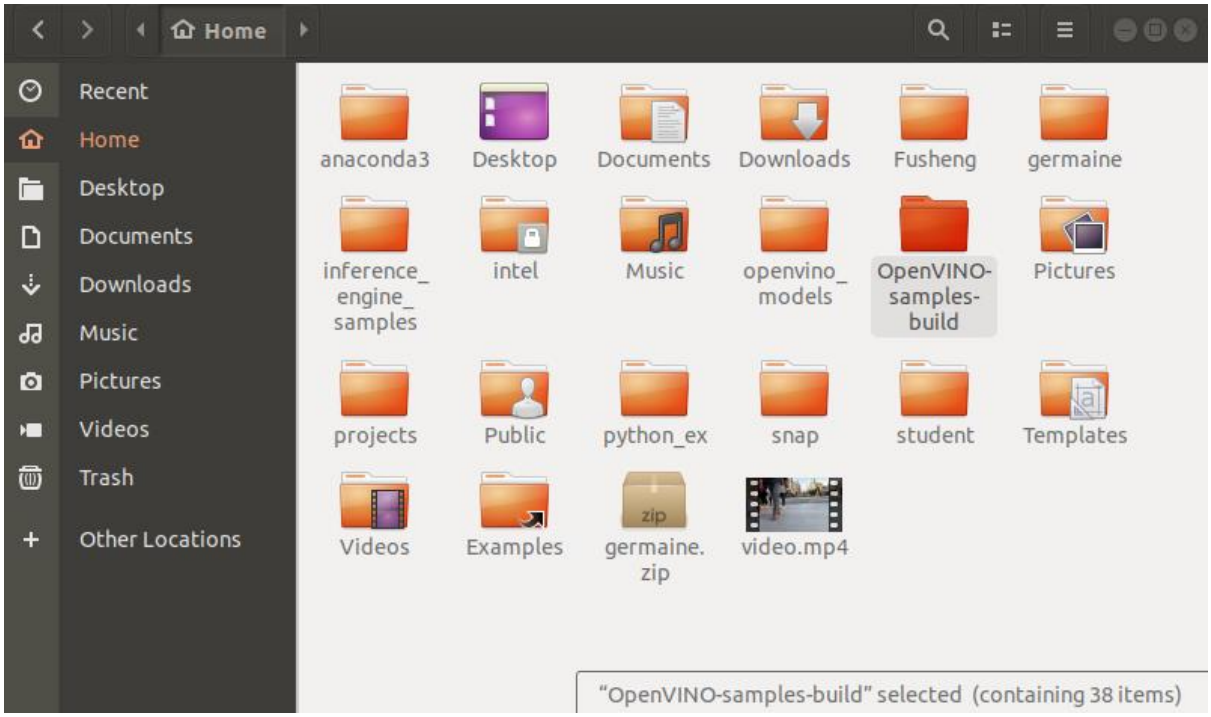
Part 3 - Setup and running of Pedestrian Tracker Demo

*****I will guide you through setup and running of demo, which you will run many types in future. I will use the Pedestrian Tracker Demo which uses two pre-trained models, Person-Detection-Retail-0013 and Person-Reidentification-Tracker-0031.

There are 5 steps to run this demo that will apply for any other demo as long as intel models are used.

***Ensure OpenVINO environment is activated before running demo**

1. Building a directory for Pedestrian Tracker Demo




```
(base) student@ICDC61:/opt/intel/computer_vision_sdk/deployment_tools/demo$ cd
(base) student@ICDC61:~$ mkdir OpenVINO-samples-build
(base) student@ICDC61:~$ cd OpenVINO-samples-build
(base) student@ICDC61:~/OpenVINO-samples-build$
```

cd
mkdir OpenVINO-samples-build
cd OpenVINO-samples-build

```
(base) student@ICDC61:~/OpenVINO-samples-build$ cmake /opt/intel/computer_vision_sdk/inference_engine/samples
/
-- The C compiler identification is GNU 7.5.0
-- The CXX compiler identification is GNU 7.5.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- CMAKE_BUILD_TYPE not defined, 'Release' will be used
-- /etc/*-release distrib: Ubuntu 18.04
-- Found InferenceEngine: /opt/intel/computer_vision_sdk_2018.5.445/deployment_tools/inference_engine/lib/ubu
ntu_18.04/intel64/libinference_engine.so (Required is at least version "1.5")
-- Performing Test HAVE_CPUID_INFO
-- Performing Test HAVE_CPUID_INFO - Success
-- Host CPU features:
--   3DNOW not supported
```

cmake /opt/intel/computer_vision_sdk/inference_engine/samples/

```
-- Configuring done
-- Generating done
-- Build files have been written to: /home/student/OpenVINO-samples-build
```

Once done, it will show “Build files have been written to /home/student/OpenVINO-samples-build”

2. Creating pedestrian tracker demo

```
(base) student@ICDC61:~/OpenVINO-samples-build$ make pedestrian_tracker_demo
Scanning dependencies of target gflags_nothreads_static
[  3%] Building CXX object thirdparty/gflags/CMakeFiles/gflags_nothreads_static.dir/src/gflags.cc.o
[  7%] Building CXX object thirdparty/gflags/CMakeFiles/gflags_nothreads_static.dir/src/gflags_reporting.cc.o
[  7%] Building CXX object thirdparty/gflags/CMakeFiles/gflags_nothreads_static.dir/src/gflags_completions.cc
.o
[ 11%] Linking CXX static library ../../intel64/Release/lib/libgflags_nothreads.a
[ 11%] Built target gflags_nothreads_static
Scanning dependencies of target ie_cpu_extension
[ 11%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_argmax.cpp.o
[ 14%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_base.cpp.o
[ 18%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_ctc_greedy.cpp.o
[ 22%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_detectionoutput.cpp.o
[ 22%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_gather.cpp.o
[ 25%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_grn.cpp.o
[ 29%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_interp.cpp.o
[ 33%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_list.cpp.o
[ 33%] Building CXX object ie_cpu_extension/CMakeFiles/ie_cpu_extension.dir/ext_mvn.cpp.o
```

make pedestrian_tracker_demo

```
[ 85%] Building CXX object pedestrian_tracker_demo/CMakeFiles/pedestrian_tracker_demo.dir/src/image_reader.cp
p.o
[ 88%] Building CXX object pedestrian_tracker_demo/CMakeFiles/pedestrian_tracker_demo.dir/src/kuhn_munkres.cp
p.o
[ 92%] Building CXX object pedestrian_tracker_demo/CMakeFiles/pedestrian_tracker_demo.dir/src/tracker.cpp.o
[ 96%] Building CXX object pedestrian_tracker_demo/CMakeFiles/pedestrian_tracker_demo.dir/src/utils.cpp.o
[ 96%] Building CXX object pedestrian_tracker_demo/CMakeFiles/pedestrian_tracker_demo.dir/main.cpp.o
[100%] Linking CXX executable ../intel64/Release/pedestrian_tracker_demo
[100%] Built target pedestrian_tracker_demo
```

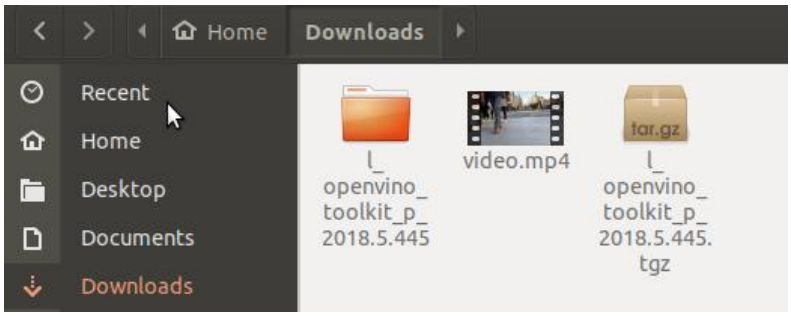
Once done, it will show “Built target pedestrian_tracker_demo”

3. Defining intel model path (using EXPORT)

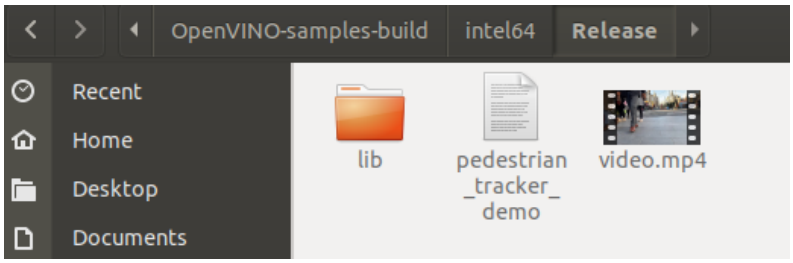
```
(base) student@ICDC61:~/OpenVINO-samples-build$ export models=/opt/intel/computer_vision_sdk/deployment_tools
/intel_models/
(base) student@ICDC61:~/OpenVINO-samples-build$
```

export models=/opt/intel/computer_vision_sdk/deployment_tools/intel_models/

4. Download video input to use in pedestrian_tracker_demo



Here is the link to download video.mp4: https://tinyurl.com/yyf7kfnv



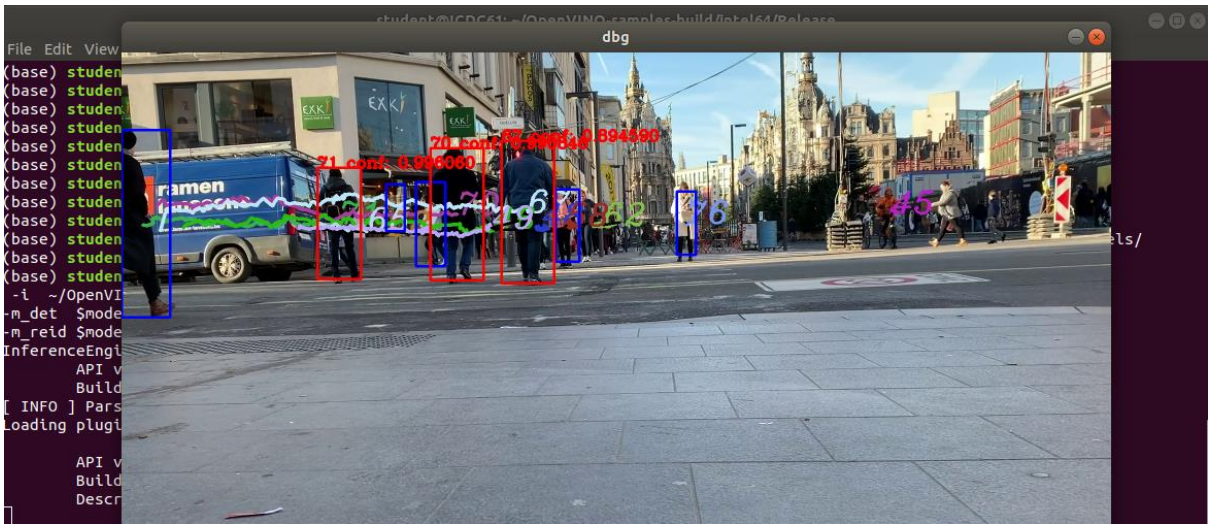
Place the video.mp4 from the Downloads folder to “OpenVINO-samples-build/intel64/Release” into the Release folder

5. Running pedestrian_tracker_demo

```
(base) student@ICDC61:~/OpenVINO-samples-build$ cd intel64/Release
(base) student@ICDC61:~/OpenVINO-samples-build/intel64/Release$ ./pedestrian_tracker_demo
 -i  ~/OpenVINO-samples-build/intel64/Release/video.mp4
-m_det  $models/person-detection-retail-0013/FP32/person-detection-retail-0013.xml                d_det CPU
-m_reid $models/person-reidentification-retail-0031/FP32/person-reidentification-retail-0031.xml   d_reid CPU
InferenceEngine:
        API version ............ 1.4
        Build .................. 19154
[ INFO ] Parsing input parameters
Loading plugin CPU

        API version ............ 1.5
        Build .................. lnx_20181004
        Description ....... MKLDNNPlugin
```

cd intel64/Release

./pedestrian_tracker_demo
-i ~/OpenVINO-samples-build/intel64/Release/video.mp4
-m_det $models/person-detection-retail-0013/FP32/person-detection-retail-0013.xml d_det CPU
-m_reid $models/person-reidentification-retail-0031/FP32/person-reidentification-retail-0031.xml d_reid CPU



Demo will run and popup of video with multiple red/blue bounding box with lines and values will show

```
Loading plugin CPU

        API version ............ 1.5
        Build .................. lnx_20181004
        Description ....... MKLDNNPlugin
[ INFO ] Execution successful
(base) student@ICDC61:~/OpenVINO-samples-build/intel64/Release$
```

When video popup is closed, terminal will show execution successful

FAQ – Pedestrian Tracker Demo Not Working

Error 1: Video input NOT specified

```
(base) student@ICDC61:~$ cd OpenVINO-samples-build/intel64/Release/
(base) student@ICDC61:~/OpenVINO-samples-build/intel64/Release$ ./pedestrian_tracker_demo -i   ~/video.mp4
   -m_det  $models/person-detection-retail-0013/FP32/person-detection-retail-0013.xml                d_det CPU
   -m_reid $models/person-reidentification-retail-0031/FP32/person-reidentification-retail-0031.xml   d_reid CPU
InferenceEngine:
        API version ............ 1.4
        Build .................. 19154
[ INFO ] Parsing input parameters
Loading plugin CPU

        API version ............ 1.5
        Build .................. lnx_20181004
        Description ....... MKLDNNPlugin
Segmentation fault (core dumped)
(base) student@ICDC61:~/OpenVINO-samples-build/intel64/Release$
```

Solution: Specify the directory where the video is in.

My directory for video is in:
OpenVINO-samples-build/intel64/Release

Thus specify as :
-i ~/OpenVINO-samples-build/intel64/Release/video.mp4

Error 2: .XML file not found

```
student@ICDC61: ~/OpenVINO-samples-build/intel64/Release
File  Edit  View  Search  Terminal  Help
(base) student@ICDC61:~$ cd /opt/intel/computer_vision_sdk/
(base) student@ICDC61:/opt/intel/computer_vision_sdk$ source bin/setupvars.sh
[setupvars.sh] OpenVINO environment initialized
(base) student@ICDC61:/opt/intel/computer_vision_sdk$ cd
(base) student@ICDC61:~$ cd OpenVINO-samples-build/intel64/Release
(base) student@ICDC61:~/OpenVINO-samples-build/intel64/Release$ ./pedestrian_tracker_demo
 -i  ~/OpenVINO-samples-build/intel64/Release/video.mp4
-m_det  $models/person-detection-retail-0013/FP32/person-detection-retail-0013.xml                d_det CPU
-m_reid $models/person-reidentification-retail-0031/FP32/person-reidentification-retail-0031.xml   d_reid CPU
InferenceEngine:
        API version ............ 1.4
        Build .................. 19154
[ INFO ] Parsing input parameters
Loading plugin CPU

        API version ............ 1.5
        Build .................. lnx_20181004
        Description ....... MKLDNNPlugin
[ ERROR ] Error loading xmlfile: /person-detection-retail-0013/FP32/person-detection-retail-0013.xml, File was not found at line:
 1 pos: 0
(base) student@ICDC61:~/OpenVINO-samples-build/intel64/Release$
```

Solution: Define intel model path using EXPORT before running demo

cd
cd OpenVINO-samples-build
export models=/opt/intel/computer_vision_sdk/deployment_tools/intel_models/
cd intel64/Release

./pedestrian_tracker_demo
-i ~/OpenVINO-samples-build/intel64/Release/video.mp4
-m_det $models/person-detection-retail-0013/FP32/person-detection-retail-0013.xml
d_det CPU -m_reid $models/person-reidentification-retail-0031/FP32/person-reidentification-retail-0031.xml d_reid CPU