

```
Requirement already satisfied: numpy>=1.24.0 in /usr/local/lib/python3.7/dist-packages (from -r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prerequisites/./requ
Requirement already satisfied: typing_extensions>=3.6.4 in /usr/local/lib/python3.7/dist-packages (from -r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prerequisites
Requirement already satisfied: defusedxml>=0.5.0 in /usr/local/lib/python3.7/dist-packages (from -r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prerequisites/./
Requirement already satisfied: requests>=2.20.0 in /usr/local/lib/python3.7/dist-packages (from -r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prerequisites/./r
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from test-generator==0.1.1->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prerequi
Requirement already satisfied: gast>=0.2.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prereq
Collecting numpy==1.24.0
  Downloading numpy-1.24.0-cp37m-manylinux_2_12_x86_64.manylinux2010_x86_64.whl (15.7 MB)
    15.7/15.7 MB 63.5 MB/s eta 0:00:00
Requirement already satisfied: grpcio<2.0,>=1.24.3 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install
Requirement already satisfied: protobuf>=3.9.2 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_pr
Collecting tensorboard<2.9,>=2.8
  Downloading tensorboard-2.8.0-py3-none-any.whl (5.0 MB)
    5.0/5.0 MB 74.4 MB/s eta 0:00:00
Requirement already satisfied: libclang>=9.0.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_pr
Requirement already satisfied: keras<2.9,>=2.8.0rc0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/insta
Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_p
Requirement already satisfied: astunparse>=1.6.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_
Requirement already satisfied: absl-py>=0.4.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_pre
Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_
Requirement already satisfied: keras-preprocessing>=1.1.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer
Requirement already satisfied: wrapt>=1.11.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prer
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model
Requirement already satisfied: flatbuffers>=1.12 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_
Requirement already satisfied: setuptools in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prereq
Requirement already satisfied: h5py>=2.9.0 in /usr/local/lib/python3.7/dist-packages (from tensorflow==2.2->-r /opt/intel/opencvino_2021/deployment_tools/model_optimizer/install_prereq
```

```
[1] import logging
log = logging.getLogger("opencvino")

[2] wget https://apt.repos.intel.com/opencvino/2021/GPG-PUB-KEY-INTEL-OPENVINO-2021
sudo apt-key add GPG-PUB-KEY-INTEL-OPENVINO-2021
echo "deb https://apt.repos.intel.com/opencvino/2021 all main" | sudo tee /etc/apt/sources.list.d/intel-opencvino-2021.list
sudo apt update
sudo apt install intel-opencvino-dev-ubuntu20-2021.3.394 -y >/dev/null $2x&1
bash /opt/intel/opencvino_2021/bin/setupvars.sh

--2022-04-24 16:18:06-- https://apt.repos.intel.com/opencvino/2021/GPG-PUB-KEY-INTEL-OPENVINO-2021
Resolving apt.repos.intel.com [23.192.81.240, 20808:1402:3880:2201:4023, 20808:1402:3880:22a0:4023]
Connecting to apt.repos.intel.com (apt.repos.intel.com)[23.192.81.240]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 939 [binary/octet-stream]
Saving to: 'GPG-PUB-KEY-INTEL-OPENVINO-2021'

GPG-PUB-KEY-INTEL-0 100%[=====] 939 ---KB/s in 0s

2022-04-24 16:18:06 (38.5 MB/s) - 'GPG-PUB-KEY-INTEL-OPENVINO-2021' saved [939/939]

OK
deb https://apt.repos.intel.com/opencvino/2021 all main
[setupvars.sh] OPENVINO environment initialized
```

```
[3] python3 -m pip install opencvino-dev

Collecting opencvino-dev
  Downloading opencvino-dev-2022.1.0-7019-py3-none-any.whl (5.8 MB)
    5.8/5.8 MB 41.4 MB/s
Collecting tokenizers==0.10.1
  Downloading tokenizers-0.10.3-cp37m-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux2_12_x86_64.manylinux2010_x86_64.whl (3.3 MB)
    3.3/3.3 MB 41.4 MB/s
Requirement already satisfied: tqdm>=4.54.1 in /usr/local/lib/python3.7/dist-packages (from opencvino-dev) (4.64.0)
Collecting jstyleson==0.0.2
  Downloading jstyleson-0.0.2.tar.gz (2.0 kB)
Requirement already satisfied: networkx==2.6 in /usr/local/lib/python3.7/dist-packages (from opencvino-dev) (2.6.3)
Collecting pyclipper==1.2.1
  Downloading pyclipper-1.3.0.post2-cp37m-manylinux_2_5_x86_64.manylinux1_x86_64.whl (603 kB)
    603 kB 53.8 MB/s
Requirement already satisfied: scikit-image>=0.17.2 in /usr/local/lib/python3.7/dist-packages (from opencvino-dev) (0.18.3)
Collecting py-cpuinfo==0.0
  Downloading py-cpuinfo-0.0.0.tar.gz (99 kB)
    99 kB 7.5 MB/s
Collecting opencv-python==4.5.4
  Downloading opencv-python-4.5.4.6d-cp36-abi3-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (60.6 MB)
    60.6/60.6 MB 1.2 MB/s
Collecting addict==2.4.0
  Downloading addict-2.4.0-py3-none-any.whl (3.8 kB)
Requirement already satisfied: shapely>=1.7.1 in /usr/local/lib/python3.7/dist-packages (from opencvino-dev) (1.8.1.post1)
Collecting pydicom==2.1.2
  Downloading pydicom-2.3.0-py3-none-any.whl (2.0 MB)
    2.0/2.0 MB 43.8 MB/s
Collecting texttable==1.6.3
  Downloading texttable-1.6.4-py2-py3-none-any.whl (10 kB)
Collecting imagecodesc==2021.11.20
  Downloading imagecodesc-2021.11.20-cp37m-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (31.0 MB)
    31.0/31.0 MB 73.3 MB/s
Collecting fast-ctc-decode==0.2.5
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    517 kB 67.4 MB/s
Collecting nltk==3.5
  Downloading nltk-3.7-py3-none-any.whl (1.5 MB)
    1.5/1.5 MB 53.0 MB/s
Collecting nibabel==3.2.1
  Downloading nibabel-3.2.2-py3-none-any.whl (3.3 MB)
    3.3/3.3 MB 41.9 MB/s
Collecting opencvino==2022.1.0
  Downloading opencvino-2022.1.0-7019-cp37m-manylinux_2_27_x86_64.whl (26.1 MB)
    26.1/26.1 MB 1.8 MB/s
Collecting numpy<1.21,>=1.16.6
  Downloading numpy-1.21.0-cp37m-manylinux_2_12_x86_64.manylinux2010_x86_64.whl (15.7 MB)
    15.7/15.7 MB 41.9 MB/s
Collecting scikit-learn==0.24.1
  Downloading scikit-learn-0.24.2-cp37m-manylinux2010_x86_64.whl (22.3 MB)
    22.3/22.3 MB 1.5 MB/s
Collecting ranspy==0.16.0
  Downloading ranspy-0.17.1-cp37m-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.9 MB)
    1.9/1.9 MB 39.7 MB/s
Collecting paracrawl==1.2.4
  Downloading paracrawl-1.2.4-py2-py3-none-manylinux2010_x86_64.whl (14.1 MB)
    14.1/14.1 MB 18.5 MB/s
Collecting progress==1.5
  Downloading progress-1.6.tar.gz (7.8 kB)

[ ] pip install imgaug==0.2.5

Collecting imgaug==0.2.5
  Downloading imgaug-0.2.5.tar.gz (502 kB)
    502 kB 4.4 MB/s
Requirement already satisfied: scipy in /usr/local/lib/python3.7/dist-packages (from imgaug==0.2.5) (1.5.4)
Requirement already satisfied: scikit-image>=0.11.0 in /usr/local/lib/python3.7/dist-packages (from imgaug==0.2.5) (0.18.5)
Requirement already satisfied: numpy>=1.7.0 in /usr/local/lib/python3.7/dist-packages (from imgaug==0.2.5) (1.19.5)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from imgaug==0.2.5) (1.15.0)
Requirement already satisfied: pillow>=7.1.0,!=7.1.1,!=7.1.2,!=7.1.3,!=7.1.4,!=7.1.5,!=7.1.6,!=7.1.7,!=7.1.8,!=7.1.9,!=7.1.10,!=7.1.11,!=7.1.12,!=7.1.13,!=7.1.14,!=7.1.15,!=7.1.16,!=7.1.17,!=7.1.18,!=7.1.19,!=7.1.20,!=7.1.21,!=7.1.22,!=7.1.23,!=7.1.24,!=7.1.25,!=7.1.26,!=7.1.27,!=7.1.28,!=7.1.29,!=7.1.30,!=7.1.31,!=7.1.32,!=7.1.33,!=7.1.34,!=7.1.35,!=7.1.36,!=7.1.37,!=7.1.38,!=7.1.39,!=7.1.40,!=7.1.41,!=7.1.42,!=7.1.43,!=7.1.44,!=7.1.45,!=7.1.46,!=7.1.47,!=7.1.48,!=7.1.49,!=7.1.50,!=7.1.51,!=7.1.52,!=7.1.53,!=7.1.54,!=7.1.55,!=7.1.56,!=7.1.57,!=7.1.58,!=7.1.59,!=7.1.60,!=7.1.61,!=7.1.62,!=7.1.63,!=7.1.64,!=7.1.65,!=7.1.66,!=7.1.67,!=7.1.68,!=7.1.69,!=7.1.70,!=7.1.71,!=7.1.72,!=7.1.73,!=7.1.74,!=7.1.75,!=7.1.76,!=7.1.77,!=7.1.78,!=7.1.79,!=7.1.80,!=7.1.81,!=7.1.82,!=7.1.83,!=7.1.84,!=7.1.85,!=7.1.86,!=7.1.87,!=7.1.88,!=7.1.89,!=7.1.90,!=7.1.91,!=7.1.92,!=7.1.93,!=7.1.94,!=7.1.95,!=7.1.96,!=7.1.97,!=7.1.98,!=7.1.99,!=7.1.100,!=7.1.101,!=7.1.102,!=7.1.103,!=7.1.104,!=7.1.105,!=7.1.106,!=7.1.107,!=7.1.108,!=7.1.109,!=7.1.110,!=7.1.111,!=7.1.112,!=7.1.113,!=7.1.114,!=7.1.115,!=7.1.116,!=7.1.117,!=7.1.118,!=7.1.119,!=7.1.120,!=7.1.121,!=7.1.122,!=7.1.123,!=7.1.124,!=7.1.125,!=7.1.126,!=7.1.127,!=7.1.128,!=7.1.129,!=7.1.130,!=7.1.131,!=7.1.132,!=7.1.133,!=7.1.134,!=7.1.135,!=7.1.136,!=7.1.137,!=7.1.138,!=7.1.139,!=7.1.140,!=7.1.141,!=7.1.142,!=7.1.143,!=7.1.144,!=7.1.145,!=7.1.146,!=7.1.147,!=7.1.148,!=7.1.149,!=7.1.150,!=7.1.151,!=7.1.152,!=7.1.153,!=7.1.154,!=7.1.155,!=7.1.156,!=7.1.157,!=7.1.158,!=7.1.159,!=7.1.160,!=7.1.161,!=7.1.162,!=7.1.163,!=7.1.164,!=7.1.165,!=7.1.166,!=7.1.167,!=7.1.168,!=7.1.169,!=7.1.170,!=7.1.171,!=7.1.172,!=7.1.173,!=7.1.174,!=7.1.175,!=7.1.176,!=7.1.177,!=7.1.178,!=7.1.179,!=7.1.180,!=7.1.181,!=7.1.182,!=7.1.183,!=7.1.184,!=7.1.185,!=7.1.186,!=7.1.187,!=7.1.188,!=7.1.189,!=7.1.190,!=7.1.191,!=7.1.192,!=7.1.193,!=7.1.194,!=7.1.195,!=7.1.196,!=7.1.197,!=7.1.198,!=7.1.199,!=7.1.200,!=7.1.201,!=7.1.202,!=7.1.203,!=7.1.204,!=7.1.205,!=7.1.206,!=7.1.207,!=7.1.208,!=7.1.209,!=7.1.210,!=7.1.211,!=7.1.212,!=7.1.213,!=7.1.214,!=7.1.215,!=7.1.216,!=7.1.217,!=7.1.218,!=7.1.219,!=7.1.220,!=7.1.221,!=7.1.222,!=7.1.223,!=7.1.224,!=7.1.225,!=7.1.226,!=7.1.227,!=7.1.228,!=7.1.229,!=7.1.230,!=7.1.231,!=7.1.232,!=7.1.233,!=7.1.234,!=7.1.235,!=7.1.236,!=7.1.237,!=7.1.238,!=7.1.239,!=7.1.240,!=7.1.241,!=7.1.242,!=7.1.243,!=7.1.244,!=7.1.245,!=7.1.246,!=7.1.247,!=7.1.248,!=7.1.249,!=7.1.250,!=7.1.251,!=7.1.252,!=7.1.253,!=7.1.254,!=7.1.255,!=7.1.256,!=7.1.257,!=7.1.258,!=7.1.259,!=7.1.260,!=7.1.261,!=7.1.262,!=7.1.263,!=7.1.264,!=7.1.265,!=7.1.266,!=7.1.267,!=7.1.268,!=7.1.269,!=7.1.270,!=7.1.271,!=7.1.272,!=7.1.273,!=7.1.274,!=7.1.275,!=7.1.276,!=7.1.277,!=7.1.278,!=7.1.279,!=7.1.280,!=7.1.281,!=7.1.282,!=7.1.283,!=7.1.284,!=7.1.285,!=7.1.286,!=7.1.287,!=7.1.288,!=7.1.289,!=7.1.290,!=7.1.291,!=7.1.292,!=7.1.293,!=7.1.294,!=7.1.295,!=7.1.296,!=7.1.297,!=7.1.298,!=7.1.299,!=7.1.300,!=7.1.301,!=7.1.302,!=7.1.303,!=7.1.304,!=7.1.305,!=7.1.306,!=7.1.307,!=7.1.308,!=7.1.309,!=7.1.310,!=7.1.311,!=7.1.312,!=7.1.313,!=7.1.314,!=7.1.315,!=7.1.316,!=7.1.317,!=7.1.318,!=7.1.319,!=7.1.320,!=7.1.321,!=7.1.322,!=7.1.323,!=7.1.324,!=7.1.325,!=7.1.326,!=7.1.327,!=7.1.328,!=7.1.329,!=7.1.330,!=7.1.331,!=7.1.332,!=7.1.333,!=7.1.334,!=7.1.335,!=7.1.336,!=7.1.337,!=7.1.338,!=7.1.339,!=7.1.340,!=7.1.341,!=7.1.342,!=7.1.343,!=7.1.344,!=7.1.345,!=7.1.346,!=7.1.347,!=7.1.348,!=7.1.349,!=7.1.350,!=7.1.351,!=7.1.352,!=7.1.353,!=7.1.354,!=7.1.355,!=7.1.356,!=7.1.357,!=7.1.358,!=7.1.359,!=7.1.360,!=7.1.361,!=7.1.362,!=7.1.363,!=7.1.364,!=7.1.365,!=7.1.366,!=7.1.367,!=7.1.368,!=7.1.369,!=7.1.370,!=7.1.371,!=7.1.372,!=7.1.373,!=7.1.374,!=7.1.375,!=7.1.376,!=7.1.377,!=7.1.378,!=7.1.379,!=7.1.380,!=7.1.381,!=7.1.382,!=7.1.383,!=7.1.384,!=7.1.385,!=7.1.386,!=7.1.387,!=7.1.388,!=7.1.389,!=7.1.390,!=7.1.391,!=7.1.392,!=7.1.393,!=7.1.394,!=7.1.395,!=7.1.396,!=7.1.397,!=7.1.398,!=7.1.399,!=7.1.400,!=7.1.401,!=7.1.402,!=7.1.403,!=7.1.404,!=7.1.405,!=7.1.406,!=7.1.407,!=7.1.408,!=7.1.409,!=7.1.410,!=7.1.411,!=7.1.412,!=7.1.413,!=7.1.414,!=7.1.415,!=7.1.416,!=7.1.417,!=7.1.418,!=7.1.419,!=7.1.420,!=7.1.421,!=7.1.422,!=7.1.423,!=7.1.424,!=7.1.425,!=7.1.426,!=7.1.427,!=7.1.428,!=7.1.429,!=7.1.430,!=7.1.431,!=7.1.432,!=7.1.433,!=7.1.434,!=7.1.435,!=7.1.436,!=7.1.437,!=7.1.438,!=7.1.439,!=7.1.440,!=7.1.441,!=7.1.442,!=7.1.443,!=7.1.444,!=7.1.445,!=7.1.446,!=7.1.447,!=7.1.448,!=7.1.449,!=7.1.450,!=7.1.451,!=7.1.452,!=7.1.453,!=7.1.454,!=7.1.455,!=7.1.456,!=7.1.457,!=7.1.458,!=7.1.459,!=7.1.460,!=7.1.461,!=7.1.462,!=7.1.463,!=7.1.464,!=7.1.465,!=7.1.466,!=7.1.467,!=7.1.468,!=7.1.469,!=7.1.470,!=7.1.471,!=7.1.472,!=7.1.473,!=7.1.474,!=7.1.475,!=7.1.476,!=7.1.477,!=7.1.478,!=7.1.479,!=7.1.480,!=7.1.481,!=7.1.482,!=7.1.483,!=7.1.484,!=7.1.485,!=7.1.486,!=7.1.487,!=7.1.488,!=7.1.489,!=7.1.490,!=7.1.491,!=7.1.492,!=7.1.493,!=7.1.494,!=7.1.495,!=7.1.496,!=7.1.497,!=7.1.498,!=7.1.499,!=7.1.500,!=7.1.501,!=7.1.502,!=7.1.503,!=7.1.504,!=7.1.505,!=7.1.506,!=7.1.507,!=7.1.508,!=7.1.509,!=7.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```

```
[ ] pip install folium==0.2.1
```

```
Collecting folium==0.2.1
  Downloading folium-0.2.1.tar.gz (69 kB)
    |#####| 69 kB 3.0 MB/s
Requirement already satisfied: Jinja2 in /usr/local/lib/python3.7/dist-packages (from folium==0.2.1) (2.11.3)
Requirement already satisfied: MarkupSafe>=0.23 in /usr/local/lib/python3.7/dist-packages (from Jinja2->folium==0.2.1) (2.0.1)
Building wheels for collected packages: folium
  Building wheel for folium (setup.py) ... done
  Created wheel for folium: filename=folium-0.2.1-py3-none-any.whl size=79808 sha256=e1b34625d85bbf54beaad438e71f380e506ab4bacdf7f72e0300eef0f44131159
  Stored in directory: /root/.cache/pip/wheels/9a/f0/3a/3f79a6914ff5affaf50cabad60c9f4d565283283c97f0bdcdf
Successfully built folium
Installing collected packages: folium
  Attempting uninstall: folium
    Found existing installation: folium 0.8.3
    Uninstalling folium-0.8.3:
      Successfully uninstalled folium-0.8.3
Successfully installed folium 0.2.1
```

```
[ ] pip install tf-estimator-nightly==2.8.0.dev2021122109
```

```
Collecting tf-estimator-nightly==2.8.0.dev2021122109
  Downloading tf-estimator-nightly-2.8.0.dev2021122109-py2.py3-none-any.whl (462 kB)
    |#####| 462 kB 4.2 MB/s
Installing collected packages: tf-estimator-nightly
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
tensorflow 2.8.0 requires numpy>=1.20, but you have numpy 1.19.5 which is incompatible.
Successfully installed tf-estimator-nightly-2.8.0.dev2021122109
```

```
[ ] pip install scikit-learn==1.0.0
```

```
Collecting scikit-learn==1.0.0
  Downloading scikit-learn-1.0.0-cp37-cp37m-manylinux_2_12_x86_64_manylinux2010_x86_64.whl (23.1 MB)
    |#####| 23.1 MB 1.5 MB/s
Requirement already satisfied: joblib>=0.11 in /usr/local/lib/python3.7/dist-packages (from scikit-learn==1.0.0) (1.1.0)
Requirement already satisfied: threadpoolctl>=2.0.0 in /usr/local/lib/python3.7/dist-packages (from scikit-learn==1.0.0) (3.1.0)
Requirement already satisfied: scipy>=1.1.0 in /usr/local/lib/python3.7/dist-packages (from scikit-learn==1.0.0) (1.5.4)
Requirement already satisfied: numpy>=1.14.6 in /usr/local/lib/python3.7/dist-packages (from scikit-learn==1.0.0) (1.19.5)
Installing collected packages: scikit-learn
  Attempting uninstall: scikit-learn
    Found existing installation: scikit-learn 0.24.2
    Uninstalling scikit-learn-0.24.2:
      Successfully uninstalled scikit-learn-0.24.2
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
openvino-dev 2022.1.0 requires scikit-learn==0.24.1, but you have scikit-learn 1.0 which is incompatible.
Successfully installed scikit-learn-1.0
```

```
[ ] pip install requests==2.23.0
```

```
Collecting requests==2.23.0
  Downloading requests-2.23.0-py2.py3-none-any.whl (58 kB)
    |#####| 58 kB 2.5 MB/s
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests==2.23.0) (3.0.4)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests==2.23.0) (2.10)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests==2.23.0) (2021.10.8)
Requirement already satisfied: urllib3<1.25.0,>=1.25.1, <1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages (from requests==2.23.0) (1.24.3)
Installing collected packages: requests
  Attempting uninstall: requests
    Found existing installation: requests 2.27.1
    Uninstalling requests-2.27.1:
      Successfully uninstalled requests-2.27.1
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
openvino-dev 2022.1.0 requires requests>=2.25.1, but you have requests 2.23.0 which is incompatible.
openvino-dev 2022.1.0 requires scikit-learn==0.24.1, but you have scikit-learn 1.0 which is incompatible.
data-science 0.10.6 requires folium==0.2.1, but you have folium 0.8.3 which is incompatible.
Successfully installed requests-2.23.0
```

```
✓ 7.5 [4] import tensorflow as tf
      model = tf.keras.models.load_model("../content/lane_navigation.h5")
      tf.saved_model.save(model, 'model')
```

```
INFO:tensorflow:Assets written to: model/assets
```

```
✓ 8.5 [5] model.summary()
      print(model.layers[0].name, model.layers[0].get_input_shape_at(0))
      print(model.layers[-1].name, model.layers[-1].get_output_at(0).name)
```

```
Model: "Nvidia Model"
```

Layer (type)	Output Shape	Param #
=====		
conv2d_1 (Conv2D)	(None, 31, 98, 24)	1824
conv2d_2 (Conv2D)	(None, 14, 47, 36)	21636
conv2d_3 (Conv2D)	(None, 5, 22, 48)	43248
conv2d_4 (Conv2D)	(None, 3, 20, 64)	27712
dropout_1 (Dropout)	(None, 3, 20, 64)	0
conv2d_5 (Conv2D)	(None, 1, 18, 64)	36928
flatten_1 (Flatten)	(None, 1152)	0
dropout_2 (Dropout)	(None, 1152)	0
dense_1 (Dense)	(None, 100)	115300
dense_2 (Dense)	(None, 50)	5050
dense_3 (Dense)	(None, 10)	510
dense_4 (Dense)	(None, 1)	11
=====		
Total params: 252,219		
Trainable params: 252,219		
Non-trainable params: 0		
=====		
conv2d_1 (None, 66, 200, 3)		
dense_4 dense 4/BiasAdd:0		

```
[ ] cd /opt/intel/openvino_2021/deployment_tools/model_optimizer
```

```
/opt/intel/openvino_2021.3.394/deployment_tools/model_optimizer
```

```
[ ] cd /opt/intel/openvino_2021/deployment_tools/model_optimizer/install_prerequisites
```

```
/opt/intel/openvino_2021.3.394/deployment_tools/model_optimizer/install_prerequisites
```

```
[ ] import os
      os.environ.get('PYTHONPATH', '').split(os.pathsep)
      ["opt/intel/openvino_2021.3.394/python/python3.7"]
```

```
[ ] pip install numpy==1.19.5
```

```
Requirement already satisfied: numpy==1.19.5 in /usr/local/lib/python3.7/dist-packages (1.19.5)
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead of the root user pip.
```

```
✓ [6] import openvino
```

```
✓ [7] from openvino import inference_engine
```

```
[ ] pipd
      /content
```





```
Attempting uninstall: numpy
```

```
Found existing installation: numpy 1.19.5
Uninstalling numpy-1.19.5:
```

```
Successfully uninstalled numpy-1.19.5
```

```
ERROR: pip's dependency resolver does not currently take account all the packages that are installed. This behaviour is the source of the following dependency conflicts.
```

```
yellowbrick 1.4 requires scikit-learn<1.0.0, but you have scikit-learn 0.24.2 which is incompatible.
openvino 2022.1.0 requires numpy<1.20,>=1.16.6, but you have numpy 1.21.6 which is incompatible.
openvino-dev 2022.1.0 requires numpy<1.20,>=1.16.6, but you have numpy 1.21.6 which is incompatible.
openvino-dev 2022.1.0 requires numpy<1.21,>=1.19.0; python_version > '3.6', but you have numpy 1.21.0 which is incompatible.
google-colab 1.0.0 requires requests<2.23.0, but you have requests 2.27.1 which is incompatible.
datascience 0.10.6 requires folium<0.2.1, but you have folium 0.8.3 which is incompatible.
alumentations 0.1.12 requires imageio<0.2.7,>=0.2.5, but you have imageio 0.2.9 which is incompatible.
Successfully installed numpy-1.21.6 tensorflow-generator-0.1.1 tf-activator-nightly-2.8.0.dev2021122100
```

```
WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead.
```

```
[WARNING] Failed to import Inference Engine Python API in: PYTHONPATH
```

```
[WARNING] /usr/lib/x86_64-linux-gnu/libstdc++.so.6: version 'GLIBCXX_3.4.26' not found (required by /opt/intel/openvino_2021.3.394/python/python3.7/openvino/inference_engine/ie_api.
```

```
[WARNING] Failed to import Inference Engine Python API in: /opt/intel/openvino_2021.3.394/python/python3.7
```

```
[WARNING] /usr/lib/x86_64-linux-gnu/libstdc++.so.6: version 'GLIBCXX_3.4.26' not found (required by /opt/intel/openvino_2021.3.394/python/python3.7/openvino/inference_engine/ie_api.
```

```
[WARNING] Failed to import Inference Engine Python API in: /opt/intel/openvino_2021.3.394/python/python3.7
```

```
[WARNING] /usr/lib/x86_64-linux-gnu/libstdc++.so.6: version 'GLIBCXX_3.4.26' not found (required by /opt/intel/openvino_2021.3.394/python/python3.7/openvino/inference_engine/ie_api.
```

```
Name: openvino
```

```
Version: 2022.1.0
```

```
Summary: OpenVINO(TM) Runtime
```

```
Home-page: https://docs.openvino.ai/latest/index.html
```

```
Author: Intel Corporation
```

```
Author-email: openvino\_pushbot@intel.com
```

```
License: OSI Approved :: Apache Software License
```

```
Location: /usr/local/lib/python3.7/dist-packages
```

```
Requires: numpy
```

```
Required-by: openvino-dev
```

```
[WARNING] openvino (TM) Toolkit version installed in pip is incompatible with the Model Optimizer.
```

```
[WARNING] For the release version of the Model Optimizer, which is 2021.3, install the OpenVINO (TM) toolkit using "pip install openvino==2021.3" or build the Inference Engine Python
```

```
[WARNING] All Model Optimizer dependencies are installed globally.
```

```
[WARNING] If you want to keep Model Optimizer in separate sandbox
```

```
[WARNING] run install_prerequisites.sh "(caffe|tf|tf2|mxnet|kaldi|onnx)" venv
```

```
[12] exec_net = ie.load_network(network=net, device_name="MYRIAD")
```

```
RuntimeError                                Traceback (most recent call last)
```

```
<ipython-input-12-daf202290e5> in <module>()
```

```
----> 1 exec_net = ie.load_network(network=net, device_name="MYRIAD")
```

```
ie_api.pyx in openvino.inference_engine.ie_api.IECore.load_network()
```

```
ie_api.pyx in openvino.inference_engine.ie_api.IECore.load_network()
```

```
RuntimeError: Cannot load library 'libopenvino_intel_myriad_plugin.so: libopenvino_intel_myriad_plugin.so: cannot open shared object file: No such file or directory
```

```
SEARCH STACK OVERFLOW
```

```
files = lfind --name libopenvino_intel_myriad_plugin.so
```

```
print(files)
```

```
[]
```

```
[]
```

```
[]
```

```
[ ] cd /content
```

```
/content
```

```
[ ] pwd
```

```
'/content'
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```
[ ]
```

```
import cv2
```

```
import matplotlib.pyplot as plt
```

```
# %matplotlib inline
```

```
image1 = cv2.imread('video01_000_005.png')
```

```
assert not isinstance(image1,type(None)), 'image not found'
```

```
[ ]
```

```
def img_preprocess(image):
    height, , = image.shape
    image = image[int(height/2),:,:] # remove top half of the image, as it is not relevant for lane following
    image = cv2.cvtColor(image, cv2.COLOR_RGB2YUV) # Nvidia model said it is best to use YUV color space
    image = cv2.GaussianBlur(image, (3,3), 0)
    image = cv2.resize(image, (200,66)) # input image size (200,66) Nvidia model
    image = image / 255 # normalizing, the processed image becomes black for some reason. do we need this?
    return image
```

```
fig, axes = plt.subplots(1, 2, figsize=(15, 10))
image_orig = image1
image_processed = img_preprocess(image_orig)
```

```
axes[0].imshow(image_orig)
```

```
axes[0].set_title("orig")
```

```
axes[1].imshow(image_processed)
```

```
axes[1].set_title("processed")
```

```
Text(0.5, 1.0, 'processed')
```

```
orig
```

```
processed
```

```
0 50 100 150 200 250 300
```

```
0 50 100 150 200
```

```
0 25 50 75 100 125 150 175
```

```
0 50 100 150 200
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