

In [2]:

```
#importing necessary libraries
import tensorflow as tf
from tensorflow.keras import datasets, layers, models
from tensorflow.keras.applications.inception_v3 import preprocess_input
import matplotlib.pyplot as plt
import numpy as np
from tensorflow.keras.layers import Input, Lambda, Dense, Flatten
from tensorflow.keras.models import Model
from tensorflow.keras.preprocessing import image
from tensorflow.keras.preprocessing.image import ImageDataGenerator, load_img
from tensorflow.keras.models import Sequential
from glob import glob
import tensorflow_hub as hub
import os
import numpy as np
```

In [5]:

```
!pip install onnxruntime
```

Requirement already satisfied: onnxruntime in /usr/local/lib/python3.7/dist-packages (1.9.0)
Requirement already satisfied: protobuf in /usr/local/lib/python3.7/dist-packages (from onnxruntime) (3.17.3)
Requirement already satisfied: numpy>=1.16.6 in /usr/local/lib/python3.7/dist-packages (from onnxruntime) (1.19.5)
Requirement already satisfied: flatbuffers in /usr/local/lib/python3.7/dist-packages (from onnxruntime) (2.0)
Requirement already satisfied: six>=1.9 in /usr/local/lib/python3.7/dist-packages (from protobuf->onnxruntime) (1.15.0)

In [1]:

```
!pip install -U tf2onnx
```

Requirement already satisfied: tf2onnx in /usr/local/lib/python3.7/dist-packages (1.9.3)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from tf2onnx) (1.15.0)
Requirement already satisfied: numpy>=1.14.1 in /usr/local/lib/python3.7/dist-packages (from tf2onnx) (1.19.5)
Requirement already satisfied: flatbuffers~=1.12 in /usr/local/lib/python3.7/dist-packages (from tf2onnx) (1.12)
Requirement already satisfied: onnx>=1.4.1 in /usr/local/lib/python3.7/dist-packages (from tf2onnx) (1.10.2)
Requirement already satisfied: requests in /usr/local/lib/python3.7/dist-packages (from tf2onnx) (2.23.0)
Requirement already satisfied: protobuf in /usr/local/lib/python3.7/dist-packages (from onnx>=1.4.1->tf2onnx) (3.17.3)
Requirement already satisfied: typing-extensions>=3.6.2.1 in /usr/local/lib/python3.7/dist-packages (from onnx>=1.4.1->tf2onnx) (3.10.0.2)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests->tf2onnx) (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->tf2onnx) (1.24.3)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests->tf2onnx) (3.0.4)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests->tf2onnx) (2.10)

In [2]:

```
!pip install git+https://github.com/onnx/tensorflow-onnx
```

```

Collecting git+https://github.com/onnx/tensorflow-onnx
  Cloning https://github.com/onnx/tensorflow-onnx to /tmp/pip-req-build-j7_5vjmc
  Running command git clone -q https://github.com/onnx/tensorflow-onnx /tmp/pip-req-build-j7_5vjmc
Requirement already satisfied: numpy>=1.14.1 in /usr/local/lib/python3.7/dist-packages (from tf2onnx==1.10.0) (1.19.5)
Requirement already satisfied: onnx>=1.4.1 in /usr/local/lib/python3.7/dist-packages (from tf2onnx==1.10.0) (1.10.2)
Requirement already satisfied: requests in /usr/local/lib/python3.7/dist-packages (from tf2onnx==1.10.0) (2.23.0)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from tf2onnx==1.10.0) (1.15.0)
Requirement already satisfied: flatbuffers~=1.12 in /usr/local/lib/python3.7/dist-packages (from tf2onnx==1.10.0) (1.12)
Requirement already satisfied: typing-extensions>=3.6.2.1 in /usr/local/lib/python3.7/dist-packages (from onnx>=1.4.1->tf2onnx==1.10.0) (3.10.0.2)
Requirement already satisfied: protobuf in /usr/local/lib/python3.7/dist-packages (from onnx>=1.4.1->tf2onnx==1.10.0) (3.17.3)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests->tf2onnx==1.10.0) (3.0.4)
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->tf2onnx==1.10.0) (1.24.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests->tf2onnx==1.10.0) (2021.10.8)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests->tf2onnx==1.10.0) (2.10)
Building wheels for collected packages: tf2onnx
  Building wheel for tf2onnx (setup.py) ... done
  Created wheel for tf2onnx: filename=tf2onnx-1.10.0-py3-none-any.whl size=435728 sha256=6cf6fd58b031c3c5401271b4a47593c9f75263c1f0af738a4dc0cfdea8b2a064
  Stored in directory: /tmp/pip-ephem-wheel-cache-82_qds59/wheels/73/99/8e/3034c9b47124da4ac24a6ea72b8da1be5af878e37c2e953bb3
Successfully built tf2onnx
Installing collected packages: tf2onnx
  Attempting uninstall: tf2onnx
    Found existing installation: tf2onnx 1.9.3
    Uninstalling tf2onnx-1.9.3:
      Successfully uninstalled tf2onnx-1.9.3
Successfully installed tf2onnx-1.10.0

```

In [3]:

```
!git clone https://github.com/onnx/tensorflow-onnx
```

```

Cloning into 'tensorflow-onnx'...
remote: Enumerating objects: 14833, done.
remote: Counting objects: 100% (2055/2055), done.
remote: Compressing objects: 100% (904/904), done.
remote: Total 14833 (delta 1436), reused 1601 (delta 1097), pack-reused 12778
Receiving objects: 100% (14833/14833), 26.71 MiB | 24.57 MiB/s, done.
Resolving deltas: 100% (11135/11135), done.

```

In [4]:

```

!python /content/tensorflow-onnx/setup.py install

running install
running bdist_egg
running egg_info
creating tf2onnx.egg-info
writing tf2onnx.egg-info/PKG-INFO
writing dependency_links to tf2onnx.egg-info/dependency_links.txt
writing requirements to tf2onnx.egg-info/requirements.txt
writing top-level names to tf2onnx.egg-info/top_level.txt
writing manifest file 'tf2onnx.egg-info/SOURCES.txt'
listing git files failed - pretending there aren't any
reading manifest file 'tf2onnx.egg-info/SOURCES.txt'
writing manifest file 'tf2onnx.egg-info/SOURCES.txt'
installing library code to build/bdist.linux-x86_64/egg
running install_lib
warning: install_lib: 'build/lib' does not exist -- no Python modules to install

creating build
creating build/bdist.linux-x86_64
creating build/bdist.linux-x86_64/egg
creating build/bdist.linux-x86_64/egg/EGG-INFO
copying tf2onnx.egg-info/PKG-INFO -> build/bdist.linux-x86_64/egg/EGG-INFO
copying tf2onnx.egg-info/SOURCES.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
copying tf2onnx.egg-info/dependency_links.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
copying tf2onnx.egg-info/requirements.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
copying tf2onnx.egg-info/top_level.txt -> build/bdist.linux-x86_64/egg/EGG-INFO
zip_safe flag not set; analyzing archive contents...
creating dist
creating 'dist/tf2onnx-1.10.0-py3.7.egg' and adding 'build/bdist.linux-x86_64/egg' to it
removing 'build/bdist.linux-x86_64/egg' (and everything under it)
Processing tf2onnx-1.10.0-py3.7.egg
Copying tf2onnx-1.10.0-py3.7.egg to /usr/local/lib/python3.7/dist-packages
Adding tf2onnx 1.10.0 to easy-install.pth file

Installed /usr/local/lib/python3.7/dist-packages/tf2onnx-1.10.0-py3.7.egg
Processing dependencies for tf2onnx==1.10.0
Searching for flatbuffers==1.12
Best match: flatbuffers 1.12
Adding flatbuffers 1.12 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for six==1.15.0
Best match: six 1.15.0
Adding six 1.15.0 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for requests==2.23.0

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```
Best match: requests 2.23.0
Adding requests 2.23.0 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for onnx==1.10.2
Best match: onnx 1.10.2
Adding onnx 1.10.2 to easy-install.pth file
Installing backend-test-tools script to /usr/local/bin
Installing check-model script to /usr/local/bin
Installing check-node script to /usr/local/bin

Using /usr/local/lib/python3.7/dist-packages
Searching for numpy==1.19.5
Best match: numpy 1.19.5
Adding numpy 1.19.5 to easy-install.pth file
Installing f2py script to /usr/local/bin
Installing f2py3 script to /usr/local/bin
Installing f2py3.7 script to /usr/local/bin

Using /usr/local/lib/python3.7/dist-packages
Searching for chardet==3.0.4
Best match: chardet 3.0.4
Adding chardet 3.0.4 to easy-install.pth file
Installing chardetect script to /usr/local/bin

Using /usr/local/lib/python3.7/dist-packages
Searching for certifi==2021.10.8
Best match: certifi 2021.10.8
Adding certifi 2021.10.8 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for idna==2.10
Best match: idna 2.10
Adding idna 2.10 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for urllib3==1.24.3
Best match: urllib3 1.24.3
Adding urllib3 1.24.3 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for protobuf==3.17.3
Best match: protobuf 3.17.3
Adding protobuf 3.17.3 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Searching for typing-extensions==3.10.0.2
Best match: typing-extensions 3.10.0.2
Adding typing-extensions 3.10.0.2 to easy-install.pth file

Using /usr/local/lib/python3.7/dist-packages
Finished processing dependencies for tf2onnx==1.10.0
```

In [5]:

```
!python /content/tensorflow-onnx/setup.py bdist_wheel

running bdist_wheel
running build
running build_py
running create_version
installing to build/bdist.linux-x86_64/wheel
running install
running install_egg_info
running egg_info
writing tf2onnx.egg-info/PKG-INFO
writing dependency_links to tf2onnx.egg-info/dependency_links.txt
writing requirements to tf2onnx.egg-info/requirements.txt
writing top-level names to tf2onnx.egg-info/top_level.txt
listing git files failed - pretending there aren't any
reading manifest file 'tf2onnx.egg-info/SOURCES.txt'
writing manifest file 'tf2onnx.egg-info/SOURCES.txt'
Copying tf2onnx.egg-info to build/bdist.linux-x86_64/wheel/tf2onnx-1.10.0-py3.7.egg-info
running install_scripts
creating build/bdist.linux-x86_64/wheel/tf2onnx-1.10.0.dist-info/WHEEL
creating 'dist/tf2onnx-1.10.0-py3-none-any.whl' and adding 'build/bdist.linux-x86_64/wheel' to it
adding 'tf2onnx-1.10.0.dist-info/METADATA'
adding 'tf2onnx-1.10.0.dist-info/WHEEL'
adding 'tf2onnx-1.10.0.dist-info/top_level.txt'
adding 'tf2onnx-1.10.0.dist-info/RECORD'
removing build/bdist.linux-x86_64/wheel
```

In [6]:

```
#after running few pip commands tflite model is converted to ONNX model
!python -m tf2onnx.convert --opset 11 --tflite /content/drive/MyDrive/model_sculpture.tflite

/usr/lib/python3.7/runpy.py:125: RuntimeWarning: 'tf2onnx.convert' found in sys.modules after import of package 'tf2onnx', but prior to execution of 'tf2onnx.convert'; this may result in unpredictable behaviour
  warn(RuntimeWarning(msg))
2021-11-24 18:37:48,803 - INFO - Using tensorflow=2.7.0, onnx=1.10.2, tf2onnx=1.10.0/d018aa
2021-11-24 18:37:48,803 - INFO - Using opset <onnx, 11>
2021-11-24 18:37:49,741 - INFO - Optimizing ONNX model
2021-11-24 18:37:52,287 - INFO - After optimization: Const -151 (339->188), GlobalAveragePool +1 (0->1), Identity -1 (1->0), ReduceMean -1 (1->0), Reshape -30 (30->0), Squeeze +1 (0->1), Transpose -364 (365->1)
2021-11-24 18:37:52,409 - INFO -
2021-11-24 18:37:52,409 - INFO - Successfully converted TensorFlow model /content/drive/MyDrive/model_sculpture.tflite to ONNX
2021-11-24 18:37:52,410 - INFO - Model inputs: ['keras_layer_input']
2021-11-24 18:37:52,410 - INFO - Model outputs: ['Identity']
2021-11-24 18:37:52,410 - INFO - ONNX model is saved at model_sculpture.onnx
```

In []: