香港中文大學
The Chinese University of Hong Kong

CMSC5743 Lab 06
TVM Tutorial-2 Materials

Yang BAI
Department of Computer Science & Engineering
Chinese University of Hong Kong
ybai@cse.cuhk.edu.hk

December 3, 2021

Outline

1. TVM Installation
2. Compile PyTorch Model by TVM
3. Homework

TVM Installation

TVM Installation

- Recommended System: MAC OS or Linux.
- LLVM 9.0+
- git clone –recursive https://github.com/apache/tvm tvm
- mkdir build
- cp cmake/config.cmake build
- open the LLVM option
- cmake ..
- make -j10

TVM Environment Setup

- vim ~/.bashrc or ~/.bash_profile
- export TVM_HOME=/Users/baiyang/Documents/Project/tvm
- export PYTHONPATH=$TVM_HOME/python:$PYTHONPATH

PyTorch and PIL Installation

- pip install torch==1.7.0
- pip install torchvision==0.8.1

Verify the correct installaltion

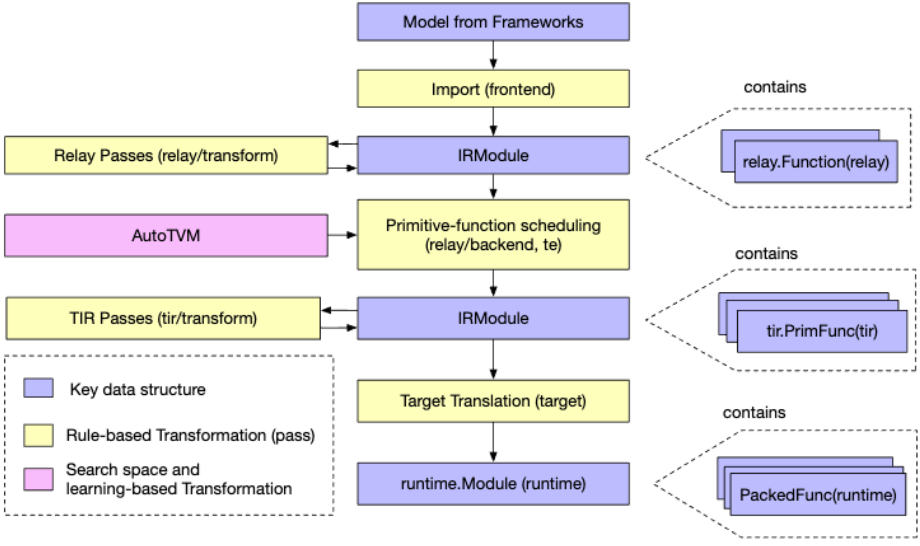
- import tvm
- tvm.__version__
- from PIL import Image
- import torch
- import torchvision

Compile PyTorch Model by TVM

Compile PyTorch Model by TVM

- Load a pretrained PyTorch model
- Load a test image
- Import the graph to Relay
- Relay Build
- Execute the portable graph on TVM
- Look up synset name

TVM Overview



Load a pretrained PyTorch model

- resnet18
- torchvision

Load a test image

- img_url
- Preprocess the image and convert to tensor

Import the graph to Relay

- relay.frontend.from_pytorch
- relay.frontend.from_tensorflow
- relay.frontend.from_mxnet
- relay.frontend.onnx

Relay Build

- target
- target_host
- relay.build

Execute the portable graph on TVM

- Set inputs
- Execute
- Get outputs

Look up synset name

- imagenet_synsets.txt
- Get top-1 result for TVM
- Get top-1 result for PyTorch
- Convert input to PyTorch variable and get PyTorch result for comparison

Homework

Homwork

- Change the `img_path` in your datapath and get the correct recognition
- Change the `model_name` in `torchvision`
- Record the final prediction of your change

THANK YOU!