Vision SDK
TI Deep Learning (TIDL)

User Guide

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1 Introduction

This user guide provides details on how to build and run TI Deep Learning (TIDL) algorithm file I/O based use cases.

Pl. refer to the following CDDS link for the videos on TIDL algorithm and Vision SDK TIDL use case:

https://cdds.ext.ti.com/ematrix/common/emxNavigator.jsp?objectId=28670.42872.30602.25095

The outlines of the TIDL file I/O use cases are as follows:

- This is file input and output based use case where in input frames are read from the input file and output frames are written to output file.
- The TIDL algorithm can be run either on EVEs or DSPs cores.
- An entire input frame is processed on a single core (EVE/DSP) and there are 2 processing pipelines which process alternate frames.

2 Build and Run TIDL use case

The TIDL use case is enabled and runs on TDA2XX SoC only.

Build the Vision SDK for TDA2XX BIOS configuration choosing the '*MAKECONFIG?=tda2xx_evm_bios_all*' in the Rules.make.

Pl. refer to the '*VisionSDK_UserGuide_TDA2xx.pdf*' for steps on building and running the Vision SDK.

Before running the Vision SDK binary,

- Make sure the following files are present in the MMC/SD card:
  - TIDLCFG.TXT (TIDL use case configuration file)
  - Input file
  - TIDL Network file
  - TIDL Parameter file
- The format of the 'TIDLCFG.TXT' is as shown below:

```
TIDL Configuration parameters
-----------------------------


###################################################################
###############
IMP:       Make  sure  the  size  of  the  file  names  (excluding
extension) is not more
        than 8 characters.
###################################################################
###############


inputWidth=1024
inputHeight=512
inputFile=IN.RGB
```

```
outputFile=OUT.BIN
netFileName=NET.BIN
paramFileName=PRM.BIN
```

Now run the Vision SDK binary and select option 'd (TIDL File I/O Usecase)' from the 'Vision SDK Usecases' main menus.

Select the core to run the TIDL algorithm:

```
[IPU1-0]  ====================
[IPU1-0]  Core Menu
[IPU1-0]  ====================
[IPU1-0]
[IPU1-0]  1: DSP
[IPU1-0]  2: EVE
```

Select the Use case Mode:

```
[IPU1-0]  ====================
[IPU1-0]  Use case Mode
[IPU1-0]  ====================
[IPU1-0]
[IPU1-0]  1: Dump Output Frames to file
[IPU1-0]  2: Free Run (Output Frames are not dumped)
```

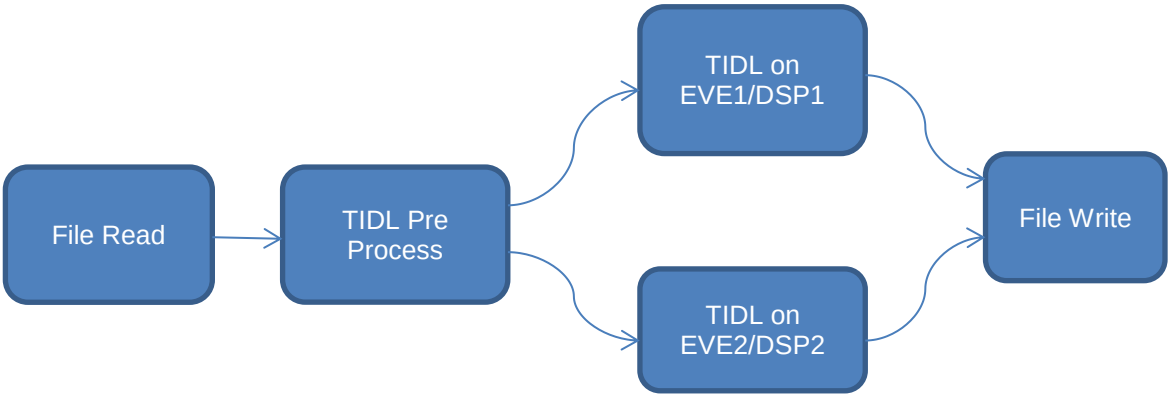
When option '1:Dump Output Frames to file' is selected, the output frames are dumped to the '`outputFile`' file and the use case exits once all the frames in the '`inputFile`' are processed.

The option '2: Free Run' doesn't dump the output frames to file and runs until stopped. This is used mainly to get the statistics data of the use case like DDR bandwidth , processor loading, TIDL algorithm performance.

3 TIDL file I/O use case

The TIDL use case can run either on EVE or DSP cores.

Entire input frame is processed on a single core and there are 2 processing pipelines which process the input frames alternatively:



The TIDL generates an 8 bit class ID (0-4) for every input pixel. This class ID represents the segment into which the input pixel belongs to.

The FIVE segments supported are:

Class ID	Segment
0	None
1	Road
2	Pedestrian
3	Traffic Sign
4	Vehicle

4 Revision History

Version	Date	Revision History
0.1	03rd March 2017	Draft
0.2	29th June 2017	Updated for Vision SDK rel 3.0

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