Embedded System Design

Assignment 4

This homework corresponds to

- Attendances: Week 10, 11, and 12 (3% of total score)
- Homework 4: (10% of total score)

What to submit: Report and result video file

- There is no fixed report format, except for the hard page limit, which is 5 pages.
- Zip your report and result video files into a single file (your_student_num.zip, ex: 2015123456.zip) and submit it.

Deadline: Refer to I-Campus

Training a DNN with a dataset and do the object detection with a video file.
(10% of total score)

Watch the lecture of Week 12-2.

Once you are done, you will train SSD-MobileNet with a new dataset and do the object detection with the trained DNN and the video file attached along with the homework assignment.

The main objective is to successfully find Kangaroos in the video file.

To accomplish this objective, do the following.

1. Download detection.zip, copy it to jetson-inference/python/training/ in your Jetson.
2. Unzip detection.zip. Then, you should be able to see the following files and folders

   /ssd (folder)
   - /data (folder)
     - /test (folder)
     - /train (folder)
     - /validation (folder)
     - class-descriptions-boxable (file)
     - sub-test-annotations-bbox (file)
     - sub-train-annotations-bbox (file)
     - sub-validation-annotations-bbox (file)
     - test-annotations-bbox (file)
     - train-annotations-bbox (file)
     - validation-annotations-bbox (file)

3. Train a DNN for object detection with the new dataset using the following command.

   ```
   python3 train_ssd.py --data=data/Kangaroo --model-dir=models/kangaroo
   ```

4. Download Video.mp4.

5. Perform object detection with the video file.
6. Capture four results that successfully find kangaroos and attached it to your report.
   (You do not need to add any explanations on them.)
7. Upload the result movie file and the report to I-Campus.