

AIDL: PROJECTS



Session 9 (2019/06/20): Moving forward. High level APIs

Project: final weeks

Project evaluation

- Project report: 40%
- Presentation: 30%
- Advisor qualification: 30%

Requirements

REPORT

- No need of a template-like report
- Github README.md is good enough!
- Experiments performed: motivation and results

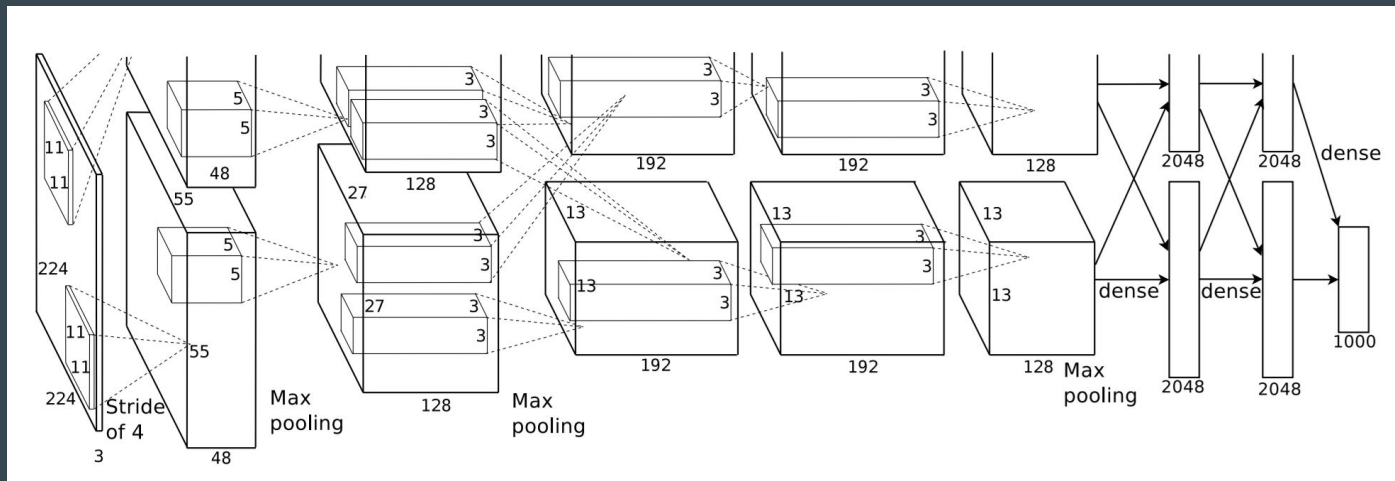
PRESENTATION

- Task definition
- Starting point
- Experiments
 - Motivation
 - Results
- Issues
- Further work
- “Demo”

Previously on *AIDL: Projects...*

AlexNet

- Winner of ILSVRC 2012
- Beginning of CNN revolution



“All of our experiments suggest that our results can be improved simply by waiting for faster GPUs and bigger datasets to become available”

Checkpointing

- Stateless train loop: **nothing is persisted**
- Solution: model checkpointing and restoration

```
saver = tf.train.Saver(var_list=tf.trainable_variables(), max_to_keep=5)
model_checkpoint_path = '/tmp/aidl/my_model_checkpoint'

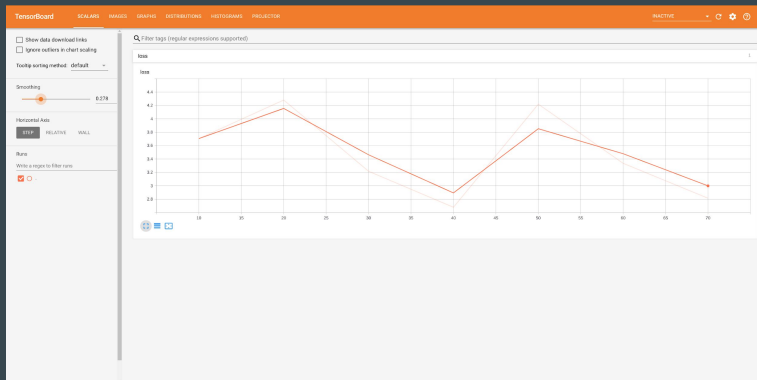
with tf.Session() as sess:
    # Run train op, loss, etc.
    saver.save(sess, save_path=model_checkpoint_path, global_step=global_step)
```

Links:

https://www.tensorflow.org/guide/saved_model#save_and_restore_variables

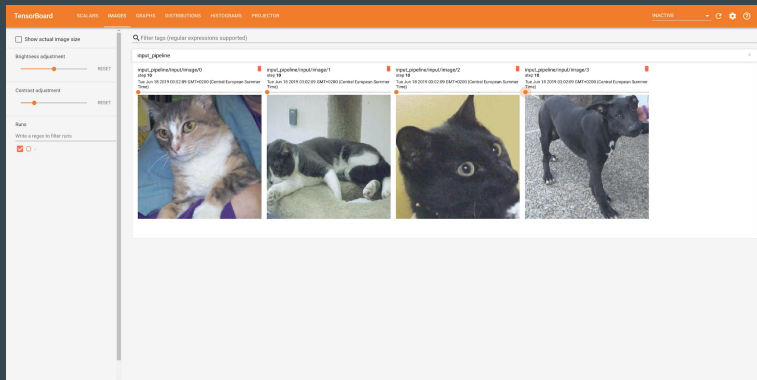
https://www.tensorflow.org/api_docs/python/tf/train/Saver

Summaries & TensorBoard



tf.summary

- `tf.summary.scalar`
Scalar values such as loss or metrics.
- `tf.summary.image`
Image tensors in grayscale, RGB or RGBA mode.
- `tf.summary.histogram`
Histograms of weights, activations or gradients.
- `tf.summary.audio`
Audio tensors with a specific number of channels and sample rate



Summaries & TensorBoard

```
# Define summaries along the graph definition
tf.summary.image('images', images, max_outputs=batch_size)

# Create summary writer and merge all summaries into a single op
writer = tf.summary.FileWriter(logdir, graph=tf.get_default_graph())
summary_op = tf.summary.merge_all()

with tf.Session() as sess:
    # Run summary op and global step
    summary, step = sess.run([summary_op, global_step])
    # Add summary to the summary events
    writer.add_summary(summary, global_step=step)
```

Links:

https://www.tensorflow.org/guide/summaries_and_tensorboard

https://www.tensorflow.org/api_docs/python/tf/summary

Questions?

