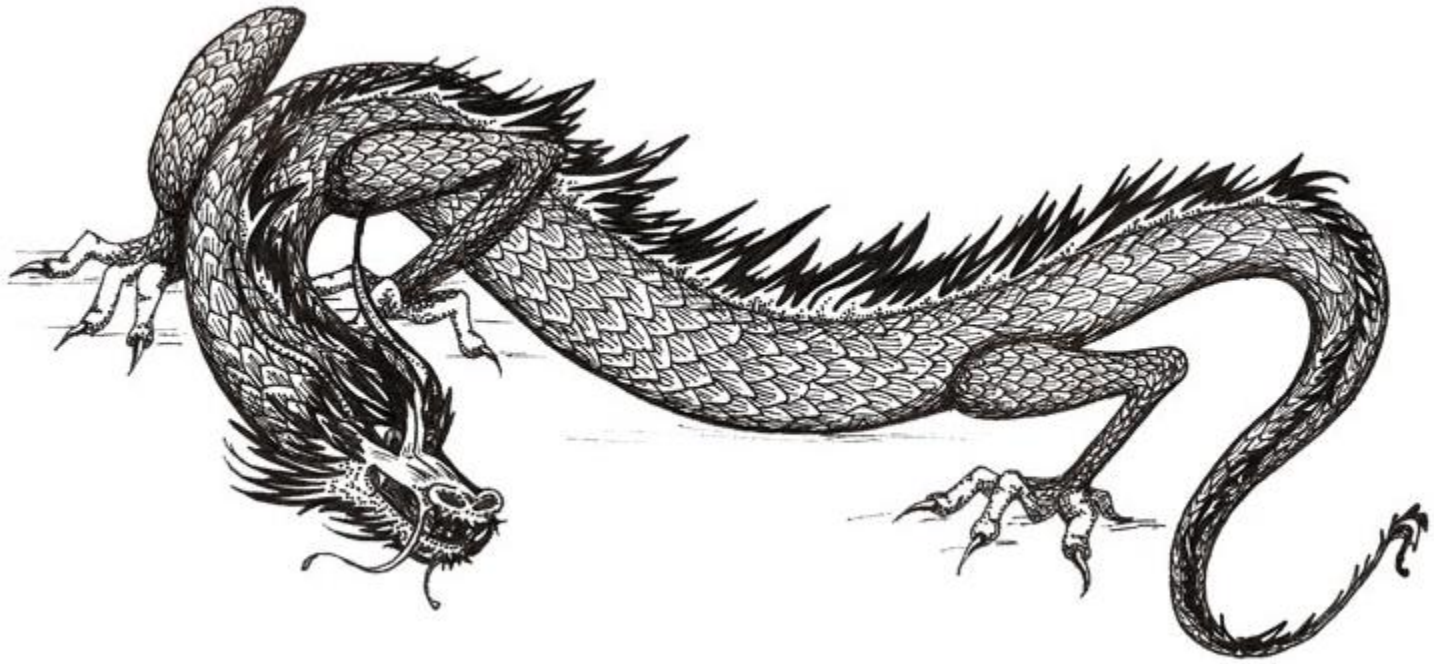
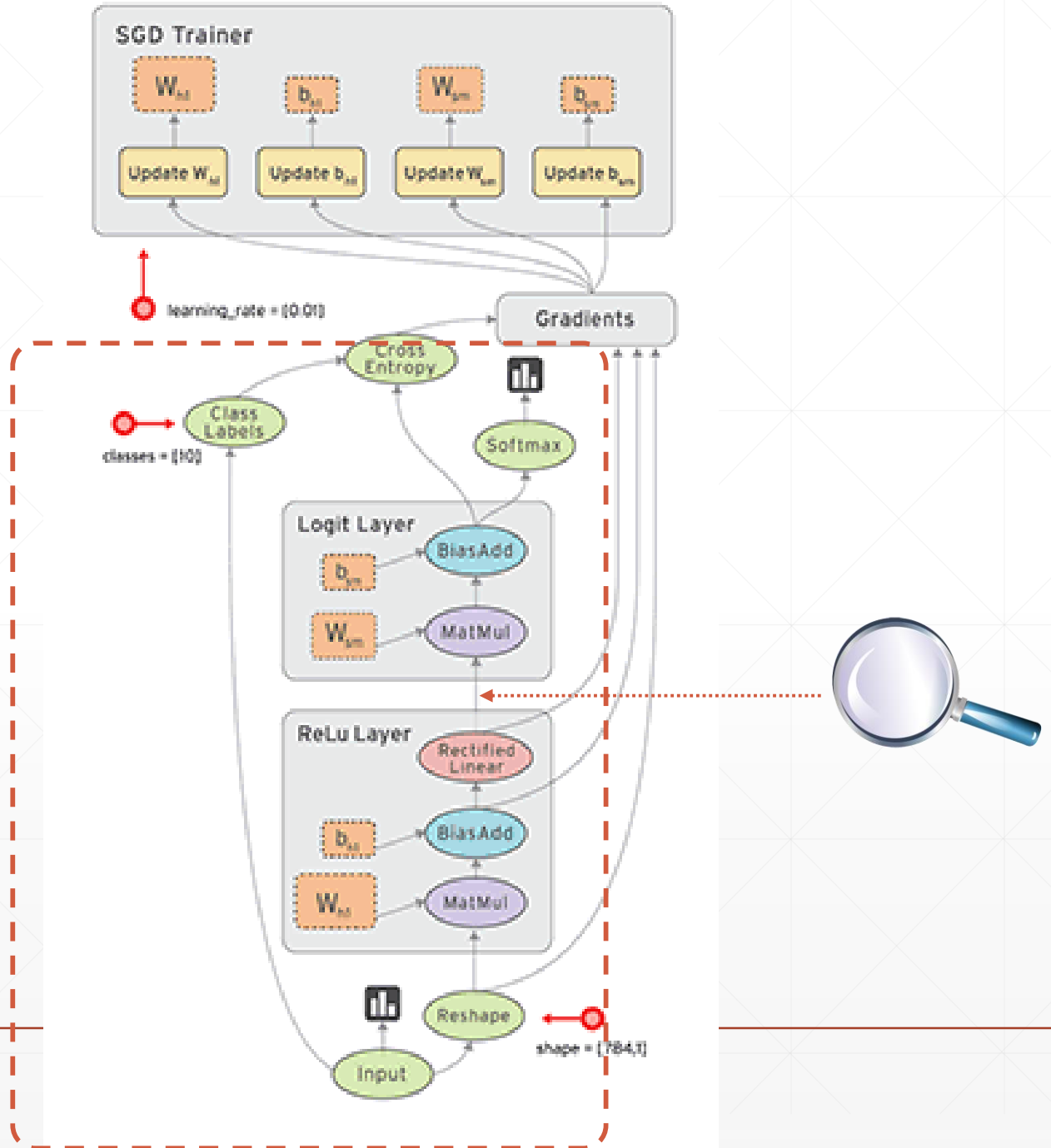


可视化

主讲：龙良曲

Tensor Flow



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

TensorBoard

TensorBoard SCALARS IMAGES AUDIO GRAPHS DISTRIBUTIONS HISTOGRAMS EMBEDDINGS TEXT

Write a regex to create a tag group

Horizontal Axis

STEP RELATIVE WALL

Runs

Write a regex to filter runs

- n_samples_1/20170530_141631
- n_samples_5/20170530_141605

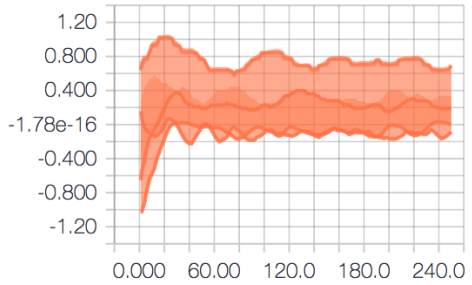
TOGGLE ALL RUNS

log

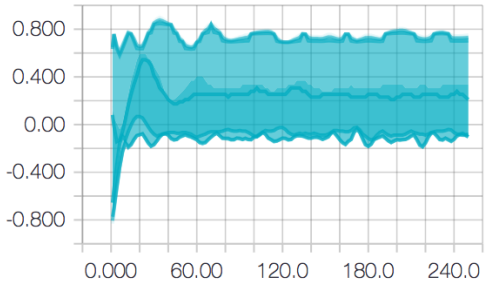
gradient 8

parameter 4

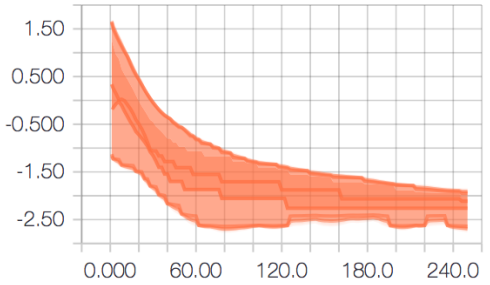
parameter/posterior/qw/loc/0
n_samples_1/20170530_141631



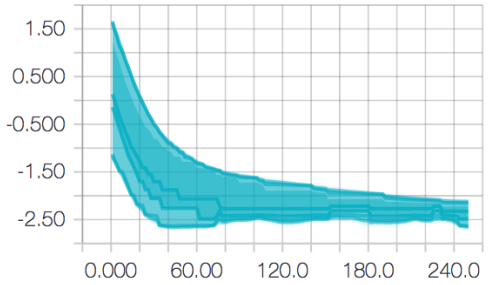
parameter/posterior/qw/loc/0
n_samples_5/20170530_141605



parameter/posterior/qw/unconstrained_scale/0
n_samples_1/20170530_141631



parameter/posterior/qw/unconstrained_scale/0
n_samples_5/20170530_141605



Visdom


Visdom
main
clear
main
save
online
Random!
Men
Women
1
2
Apples
Pears
Twitter
Google
Facebook
2012
2014
2016
The Netherlands
France
United States
Stacked area plot
Volume
Men
Women
Men
Women
Sine
Cosine

TensorBoard

- Installation
- Curves
- Image Visualization

Installation

```
i@z68:~/TutorialsCN/code_TensorFlow2.0/lesson28-可视化$ pip install tensorboard
Requirement already satisfied: tensorboard in /home/i/conda/lib/python3.6/site-
packages (1.13.0)
Requirement already satisfied: numpy>=1.12.0 in /home/i/conda/lib/python3.6/site-
packages (from tensorboard) (1.16.1)
Requirement already satisfied: markdown>=2.6.8 in
/home/i/conda/lib/python3.6/site-packages (from tensorboard) (3.0.1)
Requirement already satisfied: werkzeug>=0.11.15 in
/home/i/conda/lib/python3.6/site-packages (from tensorboard) (0.14.1)
Requirement already satisfied: absl-py>=0.4 in /home/i/conda/lib/python3.6/site-
packages (from tensorboard) (0.7.0)
Requirement already satisfied: wheel>=0.26; python_version >= "3" in
/home/i/conda/lib/python3.6/site-packages (from tensorboard) (0.33.0)
Requirement already satisfied: grpcio>=1.6.3 in /home/i/conda/lib/python3.6/site-
packages (from tensorboard) (1.18.0)
Requirement already satisfied: six>=1.10.0 in /home/i/conda/lib/python3.6/site-
packages (from tensorboard) (1.12.0)
Requirement already satisfied: protobuf>=3.6.0 in
/home/i/conda/lib/python3.6/site-packages (from tensorboard) (3.6.1)
Requirement already satisfied: setuptools in /home/i/conda/lib/python3.6/site-
packages (from protobuf>=3.6.0->tensorboard) (40.8.0)
```

Principle

- Listen logdir
- build summary instance
- fed data into summary instance

Step1.run listener

- open URL: http://localhost:6006

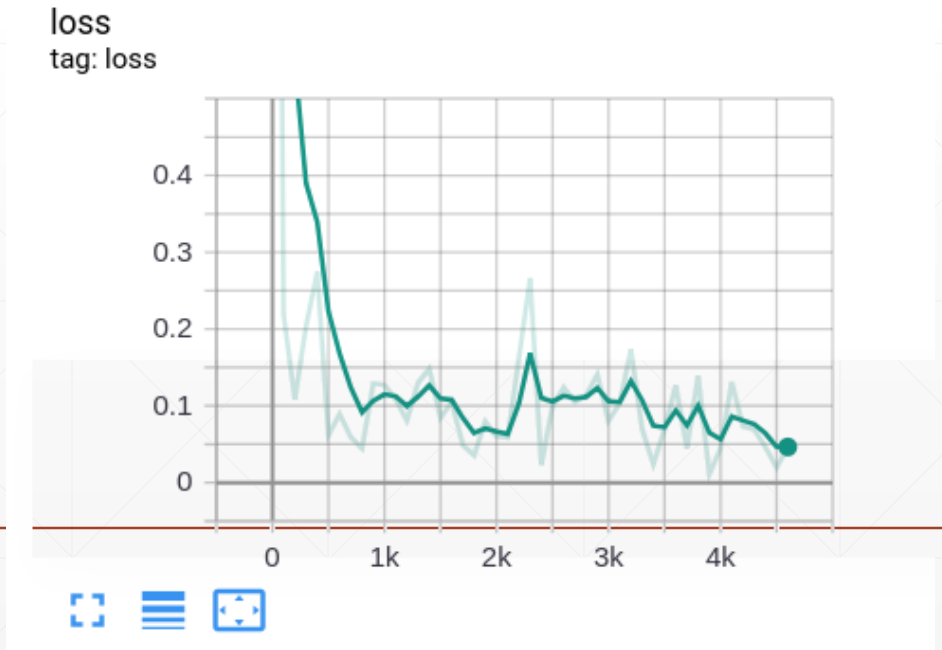
```
i@z68:~/TutorialsCN/code_TensorFlow2.0/lesson28-可视化$ tensorboard --logdir logs
TensorBoard 1.13.0 at http://z68:6006 (Press CTRL+C to quit)
c:', total_correct/total)
```

Step2.build summary

```
current_time = datetime.datetime.now().strftime("%Y%m%d-%H%M%S")
log_dir = 'logs/' + current_time
summary_writer = tf.summary.create_file_writer(log_dir)
```

Step3.fed scalar

```
with summary_writer.as_default():
    tf.summary.scalar('loss', float(loss), step=epoch)
    tf.summary.scalar('accuracy', float(train_accuracy), step=epoch)
```



Step3.fed single Image

```
# get x from (x,y)
sample_img = next(iter(db))[0]
# get first image instance
sample_img = sample_img[0]
sample_img = tf.reshape(sample_img, [1, 28, 28, 1])
with summary_writer.as_default():
    tf.summary.image("Training sample:", sample_img, step=0)
```

Training sample:

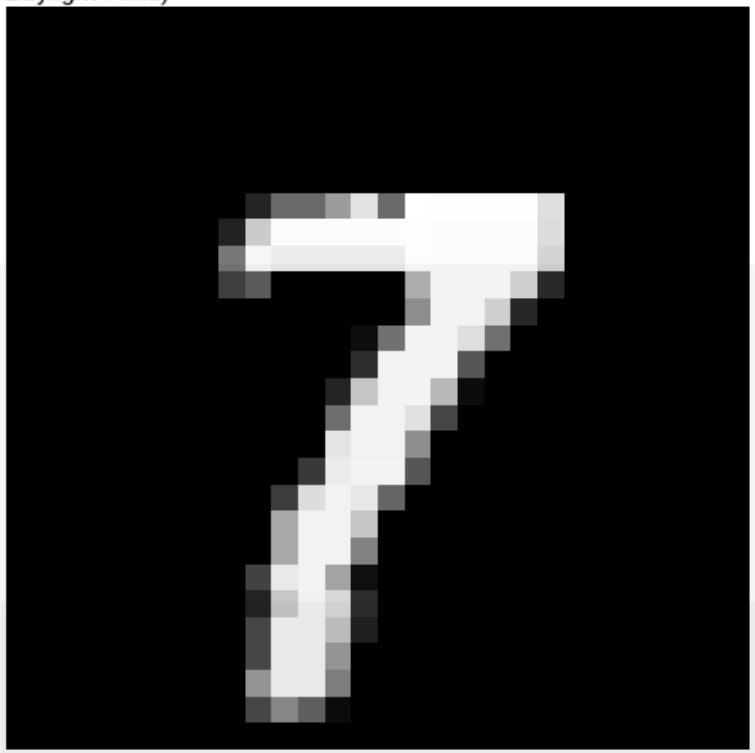
Training sample:

20190313-182356

tag: Training sample:

step **0**

Wed Mar 13 2019 18:23:58 GMT+1100 (Australian Eastern Daylight Time)



Step3.fed multi-images

```
val_images = x[:25]
val_images = tf.reshape(val_images, [-1, 28, 28, 1])
with summary_writer.as_default():
    tf.summary.scalar('test-acc', float(loss), step=step)
    tf.summary.image("val-onebyone-images:", val_images, max_outputs=25,
step=step)
```

val-onebyone-images: 20190313-182356
tag: val-onebyone-images:
sample: 13 of 25
step **4,500**Wed Mar 13 2019 18:25:19 GMT+1100 (Australian Eastern Daylight Time)

val-onebyone-images: 20190313-182356
tag: val-onebyone-images:
sample: 14 of 25
step **4,500**Wed Mar 13 2019 18:25:19 GMT+1100 (Australian Eastern Daylight Time)

val-onebyone-images: 20190313-182356
tag: val-onebyone-images:
sample: 15 of 25
step **4,500**Wed Mar 13 2019 18:25:19 GMT+1100 (Australian Eastern Daylight Time)

val-onebyone-images: 20190313-182356
tag: val-onebyone-images:
sample: 16 of 25
step **4,500**Wed Mar 13 2019 18:25:19 GMT+1100 (Australian Eastern Daylight Time)

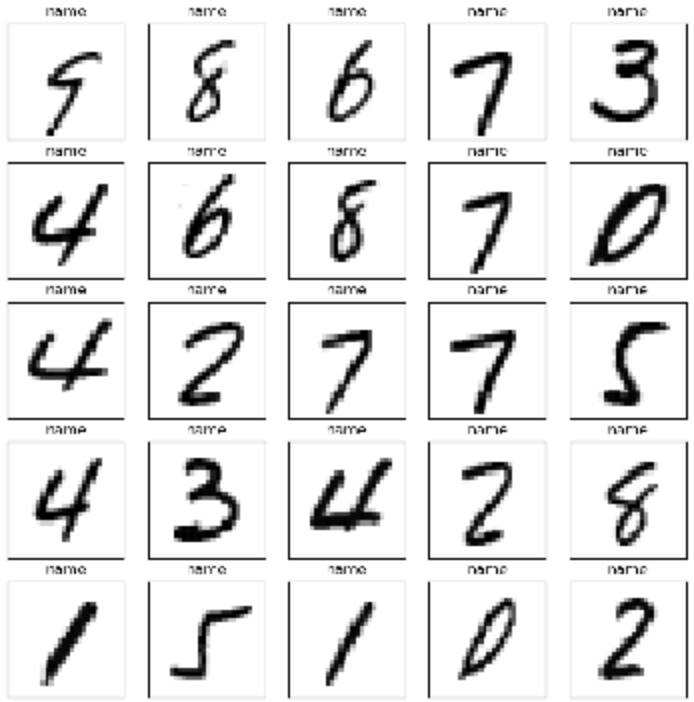
val-onebyone-images: 20190313-182356
tag: val-onebyone-images:
sample: 17 of 25
step **4,500**Wed Mar 13 2019 18:25:19 GMT+1100 (Australian Eastern Daylight Time)

val-onebyone-images: 20190313-182356
tag: val-onebyone-images:
sample: 18 of 25
step **4,500**Wed Mar 13 2019 18:25:19 GMT+1100 (Australian Eastern Daylight Time)

```
val_images = tf.reshape(val_images, [-1, 28, 28])
figure  = image_grid(val_images)
tf.summary.image('val-images:', plot_to_image(figure), step=step)
```

20190313-182356

val-images:
tag: val-images:
step **4,500**
Wed Mar 13 2019 18:25:20 GMT+1100 (Australian Eastern Daylight Time)



下一课时

选看：Visdom

必看：Keras高层接口

Thank You.