# DEEP LEARNING 平台環境之使用解說
# - DIGITS + CAFFE, TENSOWFLOW, TORCH

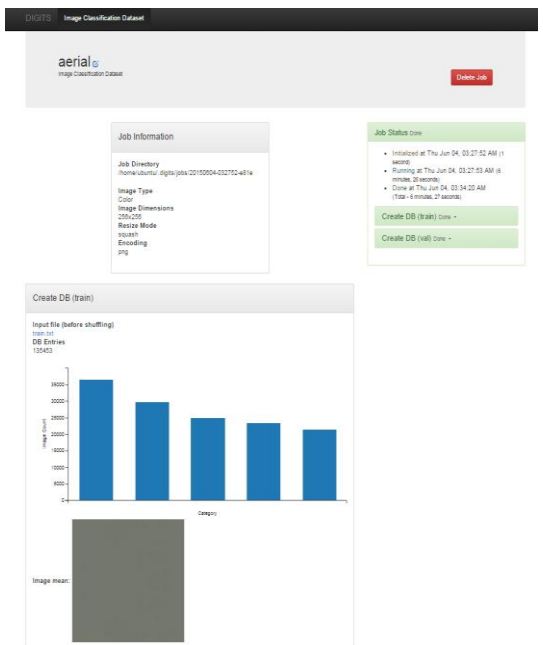
Jan. 2018

NVIDIA

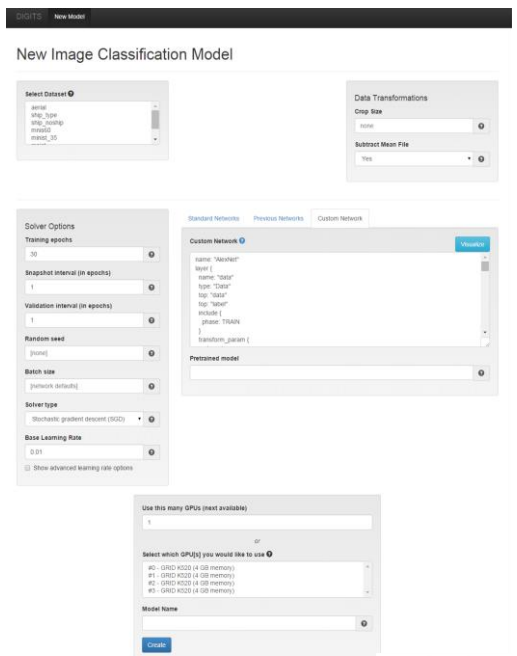
# NVIDIA DIGITS

## Interactive Deep Learning GPU Training System

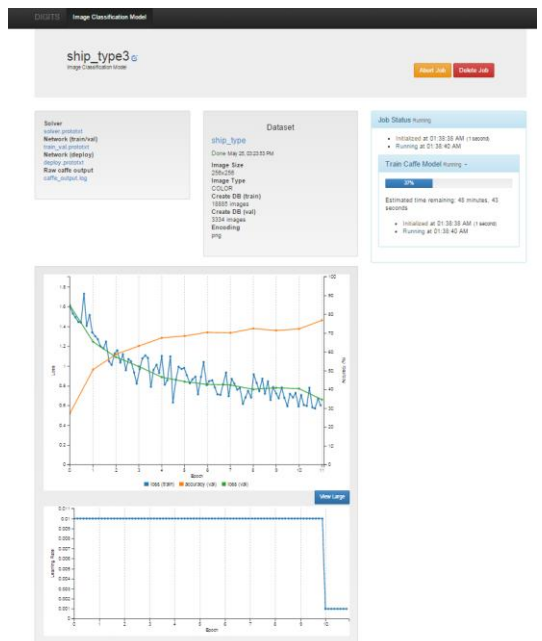
Process Data



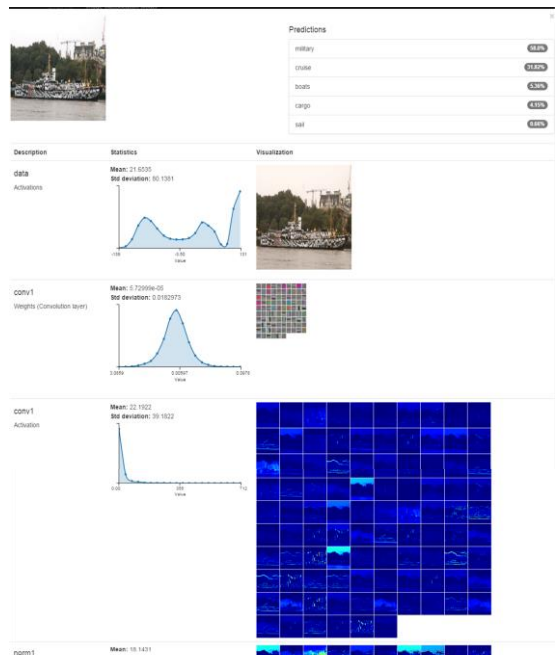

Configure DNN




Monitor Progress




Visualization




Caffe TensorFlow torch

DIGITS support DL framework: Caffe, TensorFlow, Torch

# DIGITS SUITABLE FOR BELOW COMPUTING

## IMAGE CLASSIFICATION

98% Dog

2% Cat

Classify images into classes or categories

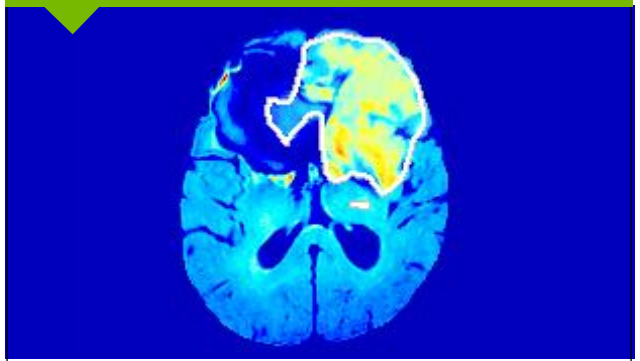
Object of interest could be anywhere in the image

## OBJECT DETECTION

Find instances of objects in an image

Objects are identified with bounding boxes

## IMAGE SEGMENTATION

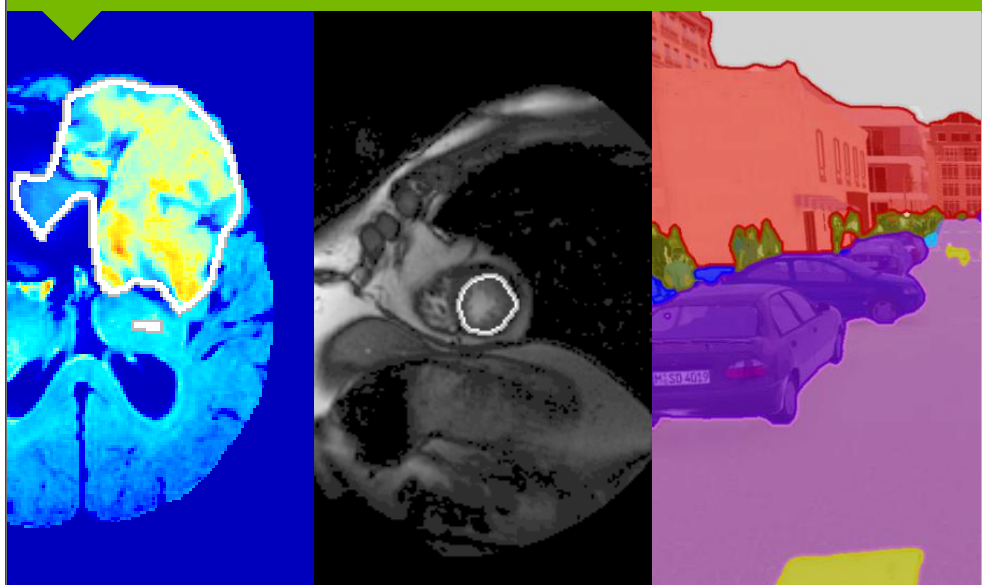


Partition image into multiple regions

Regions are classified at the pixel level

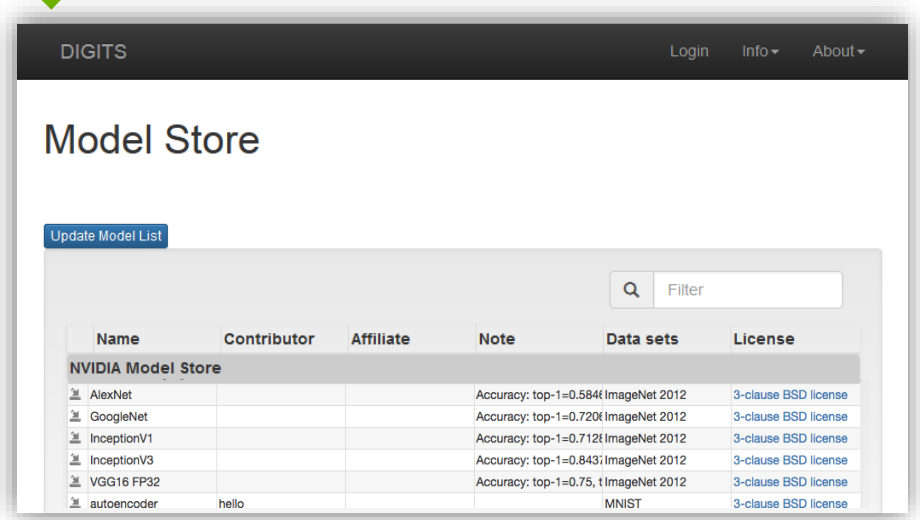
# PROVIDE MODEL STORE

## IMAGE SEGMENTATION



Partition images into regions of interest

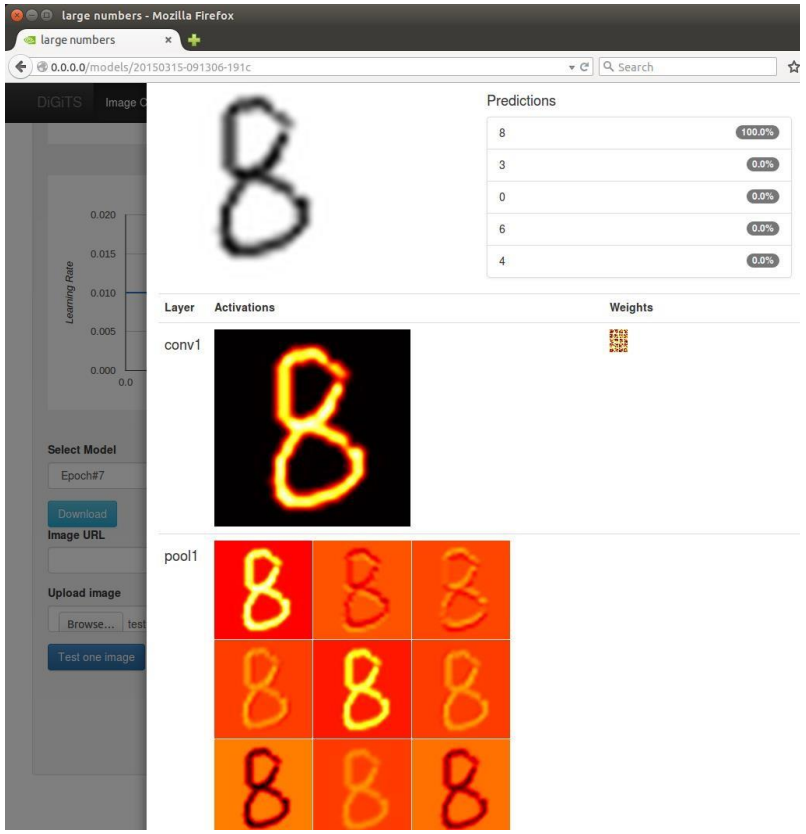
## MODEL STORE

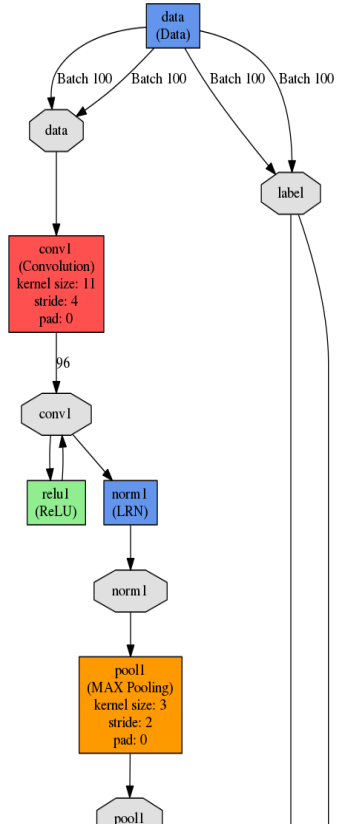



Download pre-trained neural networks

# VISUALIZATION SUPPORT

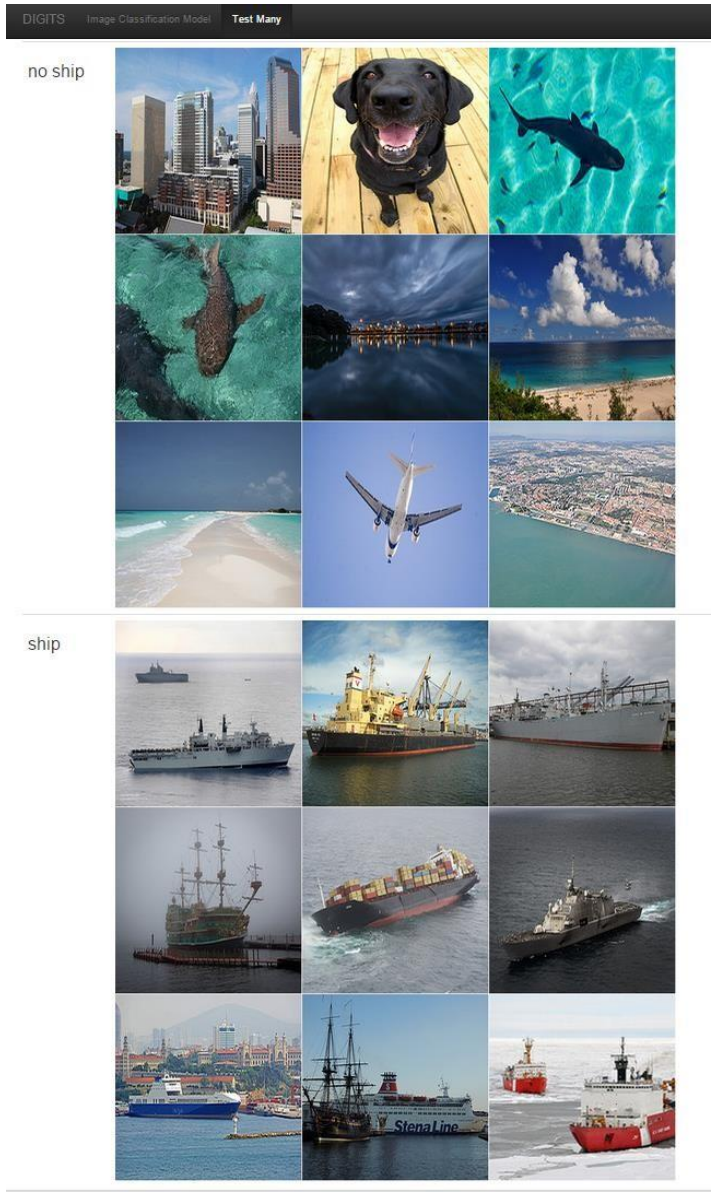
## Deep Learning GPU Training System




Who it is for

- Deep learning researchers
- Automotive
- Medical Researchers
- Defense
- Intelligent Video Analytics
- Web Companies
- Startups

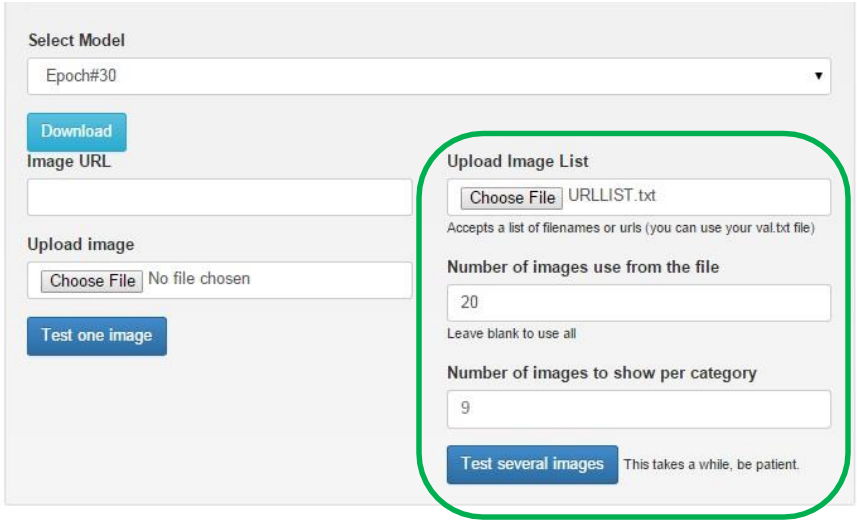



# DIGITS

## Classify Multiple Images

Upload a text file with URLs or images on the host machine

Download Model



# GAN IN DIGITS

## CelebA Dataset

DIGITS | Generic Image Model

Epoch

### Trained Models

**Select Model**

Epoch #10

Download Model

Make Pretrained Model

### Select Visualization Method

GAN

### Visualization Options

Show the output of a GAN

**Task**

CelebA Encoder

### Inference Options

**Do not resize input image(s)**

### Select Inference form

GAN

### GAN inference Options

Choose a type of dataset

**Dataset**

CelebA

Choose a task

**Task ID**

CelebA - Encode list of images

Encode file list

Use with "GAN" visualization method (select "Encoder" task).

**File list**

/media/greg/38F63723F636E0B4/datasets/celebA/list_attr_celeba.txt

**Image folder**

/media/greg/38F63723F636E0B4/datasets/celebA/img_align_celeba/

**Number of images to encode**

100

### Select Inference form

GAN

### GAN inference Options

Choose a type of dataset

**Dataset**

CelebA

Choose a task

**Task ID**

CelebA - add/remove attributes

CelebA Additive Attributes

Use with "Image Output" visualization method (HWC data order).

**Attributes vector file**

/home/greg/ws/digits/attributes_z_20170202-100209-72af.pkl

**Z vector (leave blank for random)**

6.64713979e-01 9.05301422e-03 9.21479464e-01 7.21585378e-02 3.69947910e-01 1.40126292e-02 1.01437695e-01

Add or remove attributes by filling corresponding box with +1 or -1 (or any other multiplier).

**Attributes Params**

| Bald | Black_Hair | Blond_Hair | Male | Smiling | Wearing_Lipstick | Young |
|---|---|---|---|---|---|---|
| | | | | | | |
| | +1 | -1 | | | | |
| +2 | | | | | | |
| | | | | -1 | | |
| | | | | | +2 | +2 |

Add row

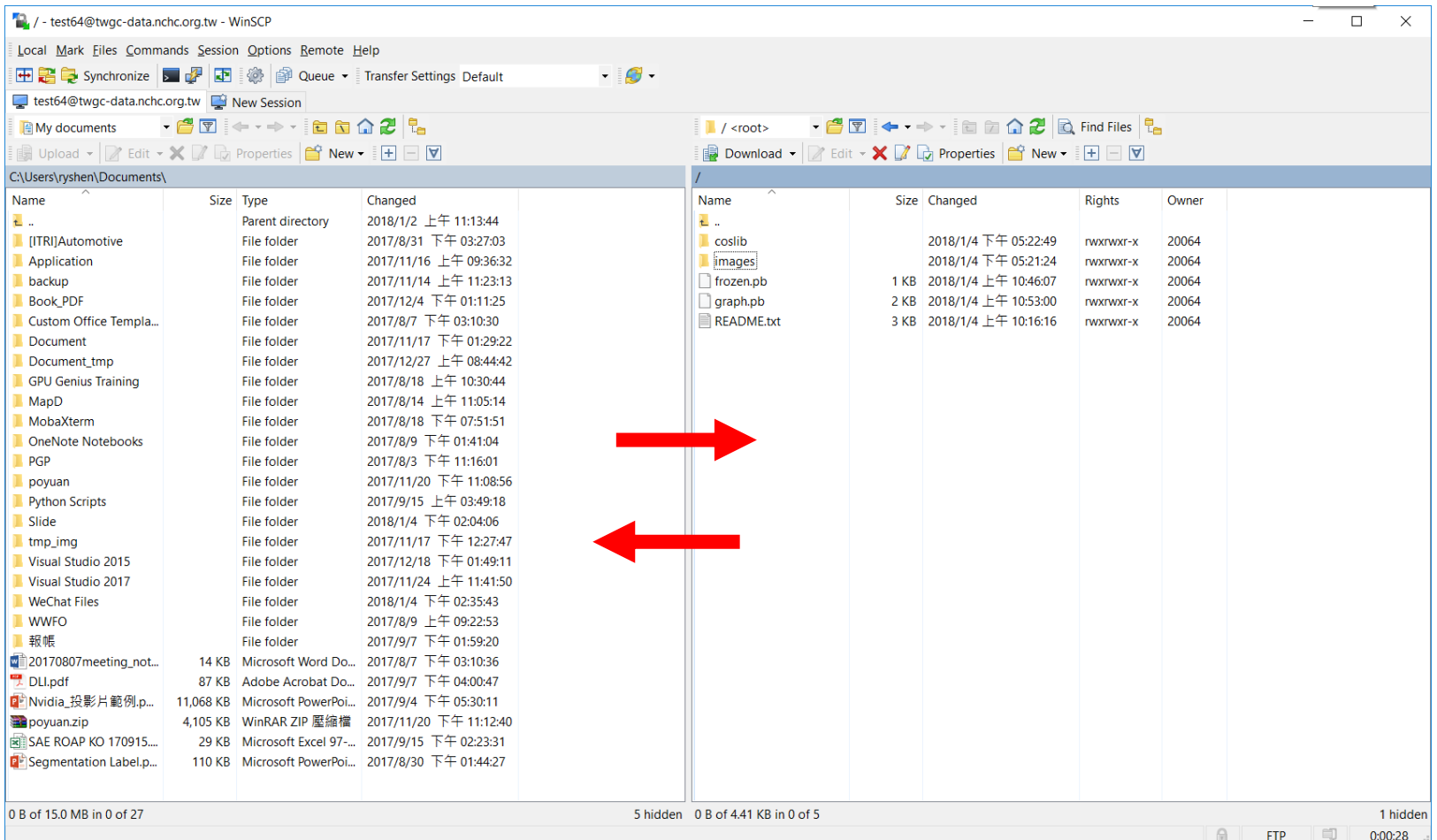
**Show visualizations and statistics**

Test

https://github.com/NVIDIA/DIGITS/tree/master/examples/gan

# UPLOAD AND DOWNLOAD

## Example: 使用FTP軟體 (WinSCP)



# NVIDIA DIGITS Resources

- NVIDIA DIGITS official web site: https://developer.nvidia.com/digits
- NVIDIA DIGITS on GitHub: https://github.com/NVIDIA/DIGITS

Once you have installed DIGITS, visit docs/GettingStarted.md for an introductory walkthrough.

Then, take a look at some of the other documentation at docs/ and examples/:

- Getting started with TensorFlow
- Getting started with Torch
- Fine-tune a pretrained model
- Creating a dataset using data from S3 endpoint
- Train an autoencoder network

# NVIDIA DIGITS Resources - continue

- Train a regression network
- Train a Siamese network
- Train a text classification network
- Train an object detection network
- Learn more about weight initialization
- Use Python layers in your Caffe networks
- Download a model and use it to classify an image outside of DIGITS
- Overview of the REST API

# OTHER USEFUL RESOURCES

- Two Days to a Demo: developer.nvidia.com/embedded/twodaystoademo
- Subscribe to Parallel For all blog: devblogs.nvidia.com/parallelforall
  - CUDACasts at bit.ly/cudacasts
- Self-paced labs: nvidia.qwiklab.com
  - 90-minute labs, simply need a supported web browser
- Sign up as a Registered Developer -www.nvidia.com/paralleldeveloper
- Technical Questions:
  - NVIDIA Developer forums devtalk.nvidia.com
  - Search or ask on stackoverflow.com/tags/cuda
- GPU Technology Conference www.gputechconf.com

# Thanks