



NVIDIA DIGITS

Interactive Deep Learning GPU Training System

The NVIDIA Deep Learning GPU Training System (DIGITS) puts the power of deep learning (/deep-learning) into the hands of engineers and data scientists. DIGITS can be used to rapidly train the highly accurate deep neural network (DNNs) for image classification, segmentation and object detection tasks.

DIGITS simplifies common deep learning tasks such as managing data, designing and training neural networks on multi-GPU systems, monitoring performance in real time with advanced visualizations, and selecting the best performing model from the results browser for deployment. DIGITS is completely interactive so that data scientists can focus on designing and training networks rather than programming and debugging.

DIGITS Download

DIGITS is available as a free download to the members of the NVIDIA Developer Program. If you are not already a member, clicking “Download” will ask you join the program.

[Download \(/rdp/form/digits-download-survey\)](/rdp/form/digits-download-survey)

NVIDIA GPU Cloud

DIGITS is available on NVIDIA GPU Cloud (NGC) as an optimized container for on-demand usage. Sign-up for an NGC account and get started with DIGITS in minutes. Visit NVIDIA GPU Cloud (<https://www.nvidia.com/en-us/gpu-cloud/>) page to learn more.

[Sign-up for NGC \(http://www.nvidia.com/ngcsignup\)](http://www.nvidia.com/ngcsignup)

What's New in DIGITS 6

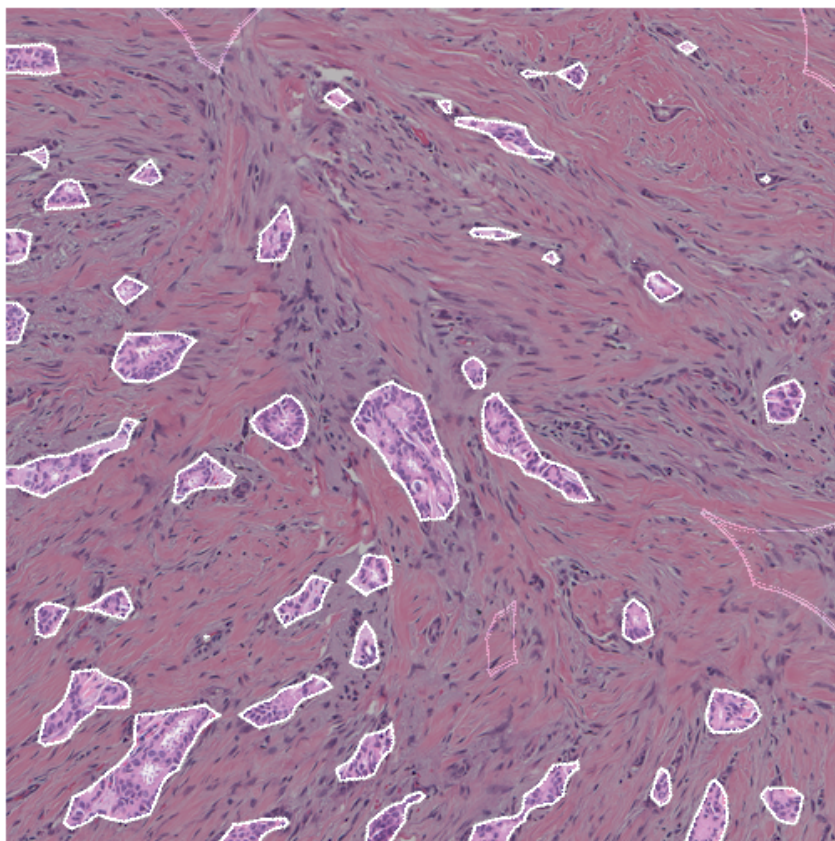
- Interactively train models using TensorFlow and visualize model architecture using TensorBoard
- Integrate custom plug-ins for importing special data formats such as DICOM used in medical imaging
- Pre-trained UNET model added to the DIGITS model store for image segmentation of medical images

Learn more about DIGITS 6:

- ~~Writing a DIGITS Plug-in for DICOM files (<http://docs.nvidia.com/deeplearning/digits/digits-tutorial/index.html>)~~

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Inference visualization



■ Class #1

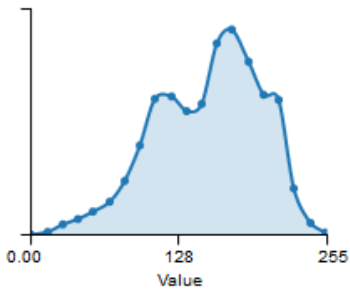
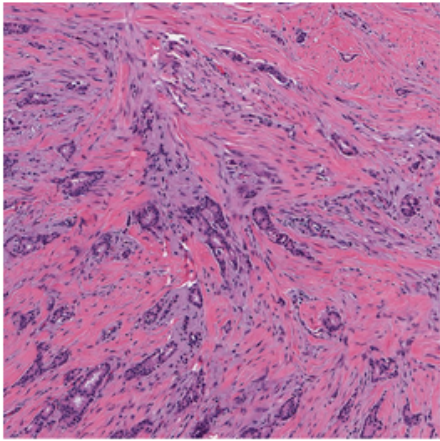

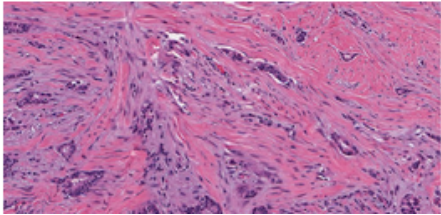
Description	Statistics	Visualization
"data" Activation	Data shape: [3 1000 1000] Mean: 151.789 Std deviation: 43.4624 	
"data_preprocessed" Activation	Data shape: [3 1000 1000] Mean: 35.7576 Std deviation: 43.4557 	

Image segmentation neural network trained with DIGITS to partition epithelium regions that contribute to identification of tumor

DEVELOPER

- Design, train and visualize deep neural networks for image classification, segmentation and object detection using Caffe, Torch and TensorFlow .. ACCOUNT (/LOGIN)
- Download pre-trained models such as AlexNet, GoogLeNet, LeNet and UNET from the DIGITS Model Store
- Perform hyperparameter sweep of learning rate and batch size for improved model accuracy
- Schedule, monitor, and manage neural network training jobs, and analyze accuracy and loss in real time
- Import a wide variety of image formats and sources with DIGITS plug-in
- Scale training jobs across multiple GPUs automatically

DIGITS is an open source project. Customize and extend DIGITS to suit your applications and share your experience using DIGITS on the DIGITS user group (<https://groups.google.com/forum/#!forum/digits-users>).

DIGITS

shashank (Logout)

Info ▾

Home

1/1 GPU available

No Jobs Running

Datasets (4)

Models (5)

New Dataset

New Model

Images ▾

Images ▾

Classification

Object Detection

Other



Filter

Delete

name

kespry_walkthrough

mnist

dummy2

dummy1

DIGITS

Image Classification Dataset

shashank (Logout)

Info ▾

None

Create DB (train)

Input File (before shuffling)

[train.txt](#)

DB Creation log file

[create_train_db.log](#)

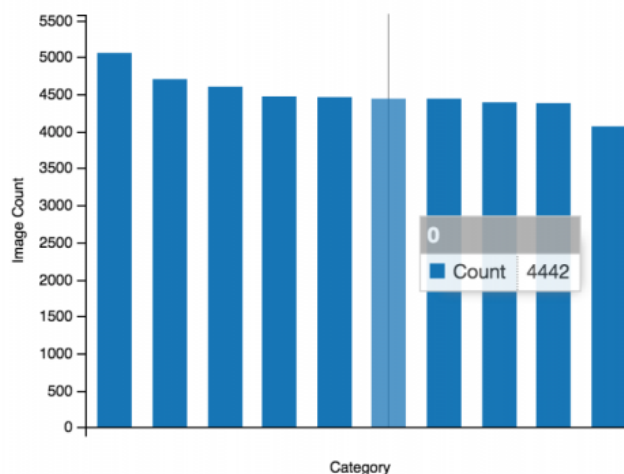


Image Mean: ?

[Explore the db](#)

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(/)

Import data for image classification and object detection neural networks

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DIGITS

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Model Store

Update Model List



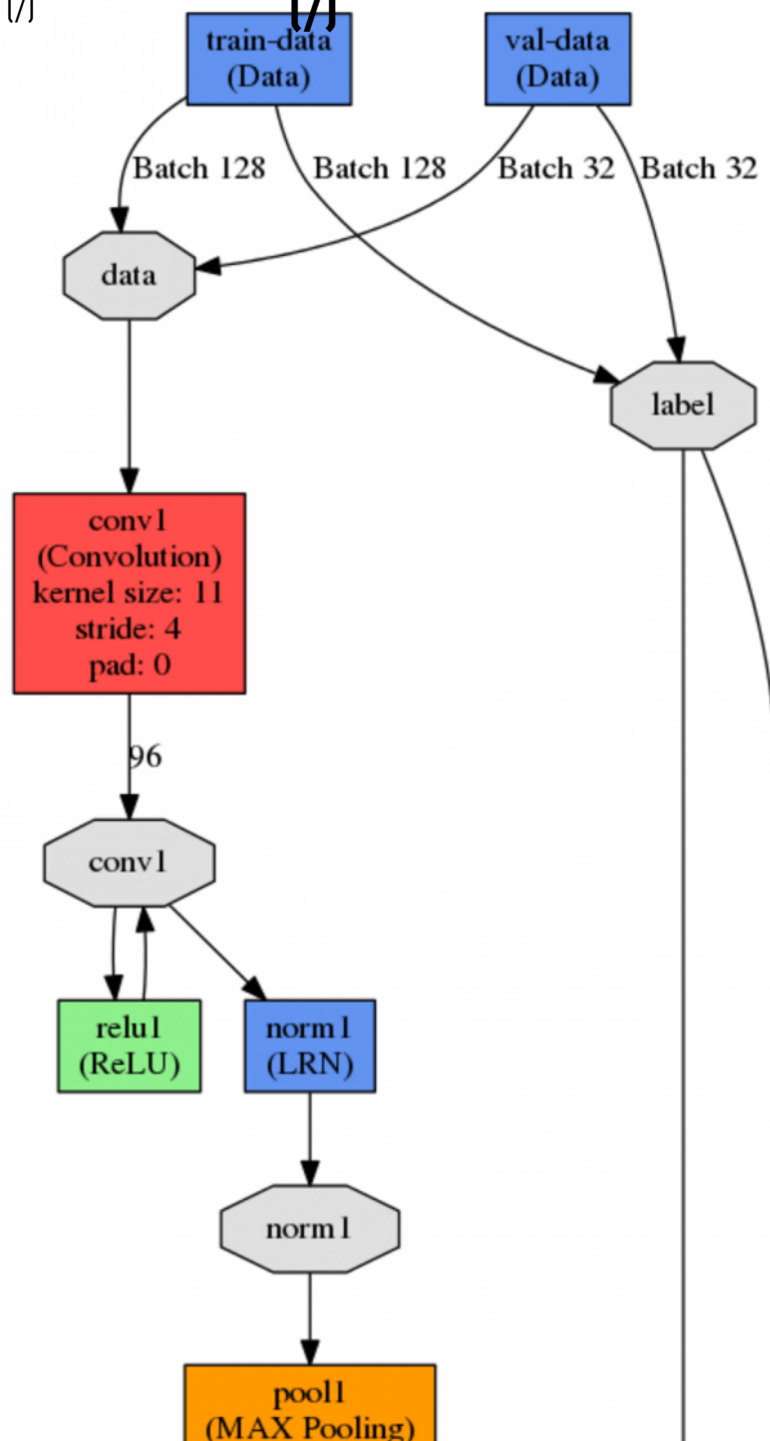
Filter

	Name	Contributor	Affiliate	Note	Data sets	License
NVIDIA Public Model Store						
	LeNet	NVIDIA			MNIST	Multiple
	AlexNet	NVIDIA		Top1: 58.5%, Top	ILSVRC2012	BSD-3
	GoogLeNet	NVIDIA		Top1: 72.1%, Top	ILSVRC2012	BSD-3

Download pre-trained models such as AlexNet, GoogLeNet and others from the DIGITS Model Store

(/)

(/)



Visualize deep neural network architectures



Running Jobs (2)

Delete

Abort

name	submitted ▲	status	loss	progress
lenet_mnist_2	4:10 AM	Waiting		0%
kespry_walkthroug...	4:09 AM	Running	 2.698	2%

Datasets (5)


Models (5)

New Dataset

New Model

Images ▾

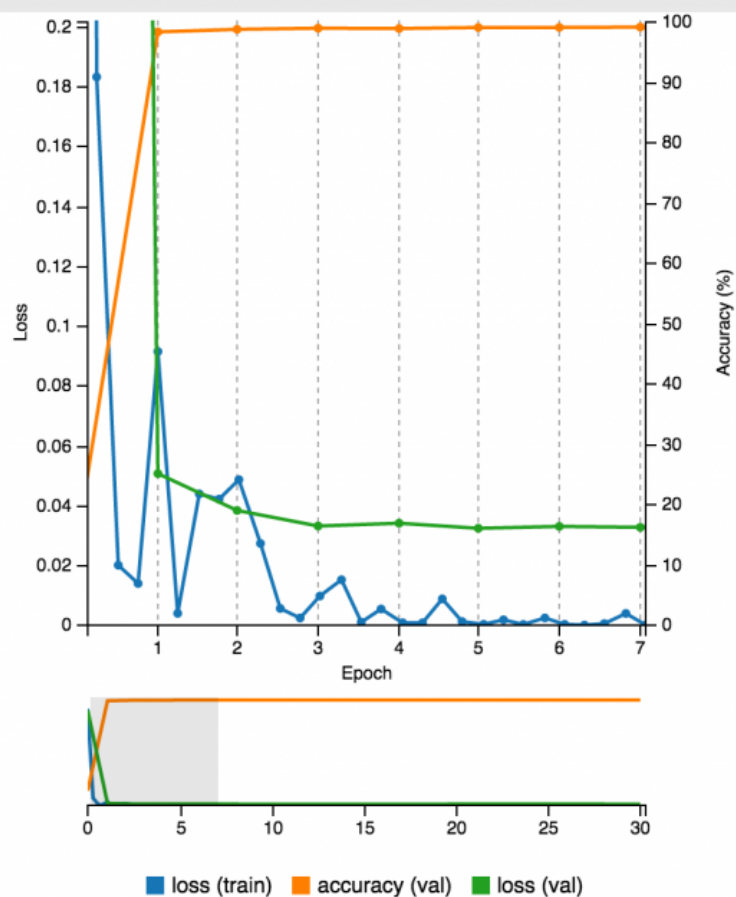
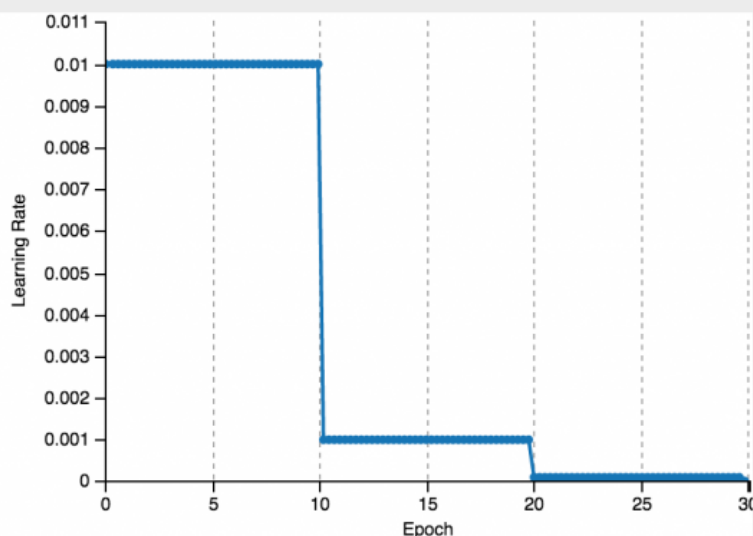
Images ▾



Delete

name	framework	status	elapsed	submitted ▲
lenet_mnist_1	caffe	Done	1m	2:45 AM

Schedule, monitor, and manage neural network training jobs

[View Large](#)

Analyze accuracy and loss in real time

Image Classification Dataset

mnist Done ▾

Image Classification Model

lenet_mnist Done ▾

Notes

Test model [↗](#)



Description

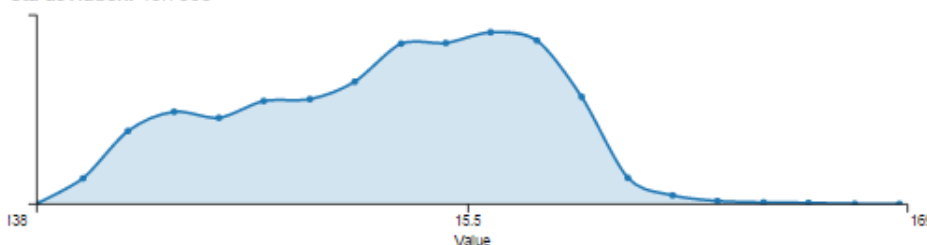
Statistics

Visualization

"data"

Activation

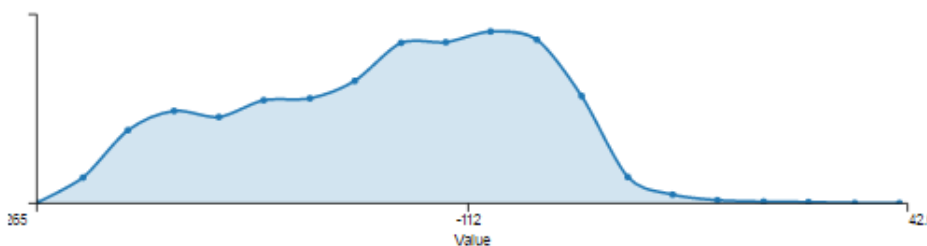
Data shape: [3 1024 1536]
 Mean: -11.9555
 Std deviation: 48.7568



"transformed_data"

Activation

Data shape: [3 1024 1536]
 Mean: -138.956
 Std deviation: 48.7568

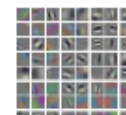


"conv1/7x7_s2"

Weights (Convolution layer)

Data shape: [64 3 7 7]
 Mean: 2.47831e-05
 Std deviation: 0.196192

7




Visualization of inference results

References:

Learn more about GPU-accelerated machine learning (<http://www.nvidia.com/object/machine-learning.html>) and deep learning (/deep-learning) technologies in these blog posts:

- Image Segmentation using DIGITS 5 (<https://devblogs.nvidia.com/parallelforall/image-segmentation-using-digits-5/>)

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- # DEVELOPER (/)
- Deep Learning for Object Detection with DIGITS (<https://devblogs.nvidia.com/parallelforall/deep-learning-object-detection-digits/>) .. ACCOUNT (/LOGIN)
 - DetectNet: Deep Neural Network for Object Detection in DIGITS (<https://devblogs.nvidia.com/parallelforall/detectnet-deep-neural-network-object-detection-digits/>)
 - Easy Multi-GPU Deep Learning with DIGITS 2 (<http://devblogs.nvidia.com/parallelforall/easy-multi-gpu-deep-learning-digits-2>)
 - Introduction to Deep Learning with DIGITS webinar recording (<http://on-demand.gputechconf.com/gtc/2015/webinar/gtc-express-digits-webinar.mp4>)
 - DIGITS: Deep Learning GPU Training System (<http://devblogs.nvidia.com/parallelforall/digits-deep-learning-gpu-training-system>)
 - Accelerate Machine Learning with the cuDNN Deep Neural Network Library (<http://devblogs.nvidia.com/parallelforall/accelerate-machine-learning-cudnn-deep-neural-network-library/>)
 - Deep Learning for Computer Vision with Caffe and cuDNN (<http://devblogs.nvidia.com/parallelforall/deep-learning-computer-vision-caffe-cudnn/>)

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[JETPACK \(/EMBEDDED-COMPUTING\)](#)

[DESIGNWORKS \(/DESIGNWORKS\)](#)

[DRIVE \(/DRIVE\)](#)

GET STARTED

[About CUDA \(/about-cuda\)](#)

[Parallel Computing \(/accelerated-computing-training\)](#)

[CUDA Toolkit \(/cuda-toolkit\)](#)

[CUDACasts \(http://www.youtube.com/playlist?list=PL5B692fm6--vScfBaxgY89lRWFzDt0Khm\)](http://www.youtube.com/playlist?list=PL5B692fm6--vScfBaxgY89lRWFzDt0Khm)

LEARN MORE

[Training and Courseware \(/cuda-education-training\)](#)

[Tools and Ecosystem \(/tools-ecosystem\)](#)

[Academic Collaboration \(/higher-education-and-research\)](#)

[Documentation \(http://docs.nvidia.com/cuda/index.html\)](http://docs.nvidia.com/cuda/index.html)

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