

**ALISON B LOWNDES**

AI DevRel | EMEA

*@alisonblowndes*

November 2018





[www.FrontierDevelopmentLab.org](http://www.FrontierDevelopmentLab.org)



NASA  
**FRONTIER**  
DEVELOPMENT LAB



esa







A MISSION CONTROL  
FOR SPACESHIP EARTH



KICK OFF WORKSHOP  
ESA ESRIIN, ROME  
25th - 29th June '18

RESEARCH SPRINT  
30th June - 17th August

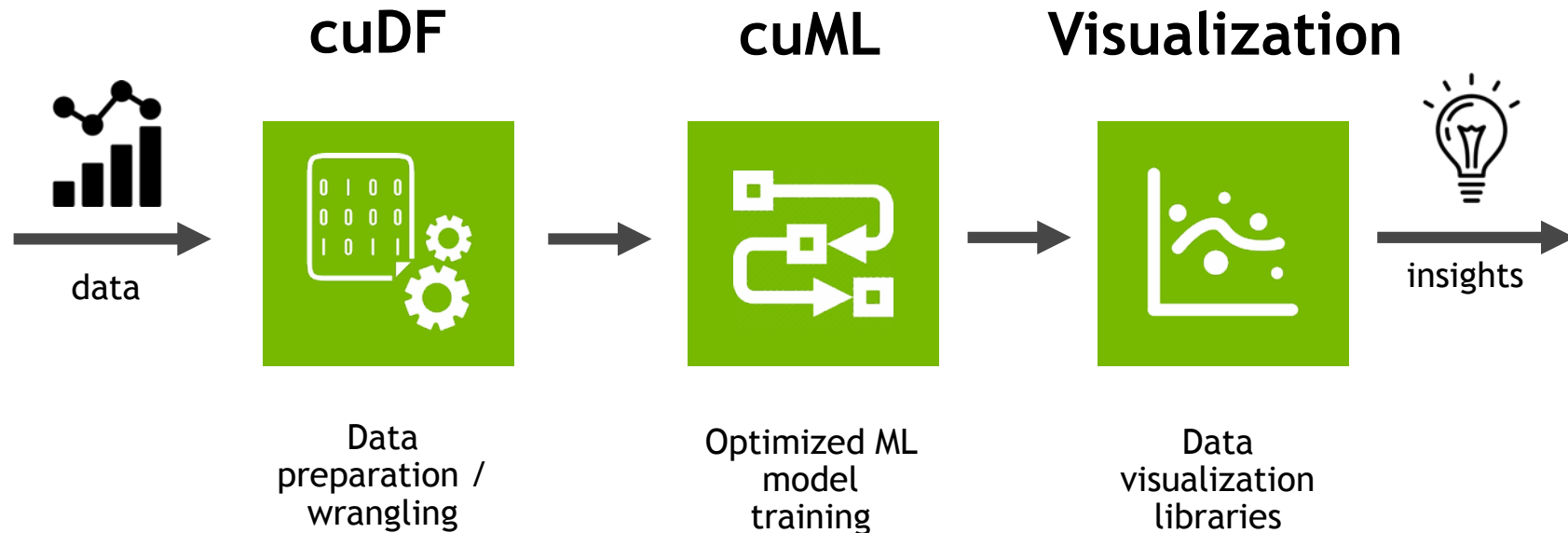


EMBED SUPERNOVA VIDEO



# RE-IMAGINING DATA SCIENCE WORKFLOW

Open Source, End-to-end GPU-accelerated Workflow Built On CUDA



[WWW.RAPIDS.AI](http://WWW.RAPIDS.AI)

# DOWNLOAD AND DEPLOY

Source available on Github | Container available on NGC and Dockerhub | PIP available soon

GitHub



NGC



docker

CONDA®



Source code, libraries, packages



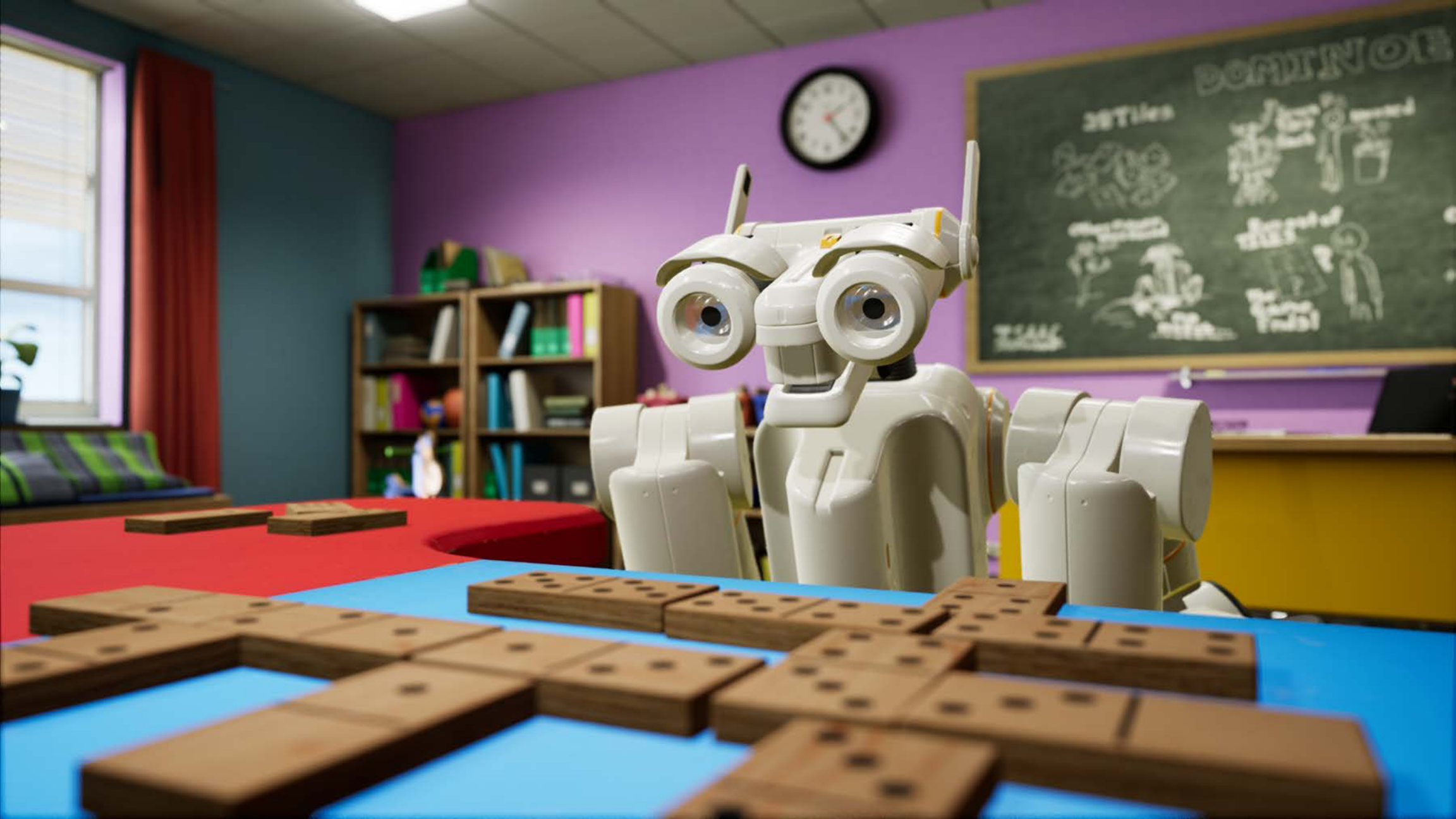
On-premises



Cloud



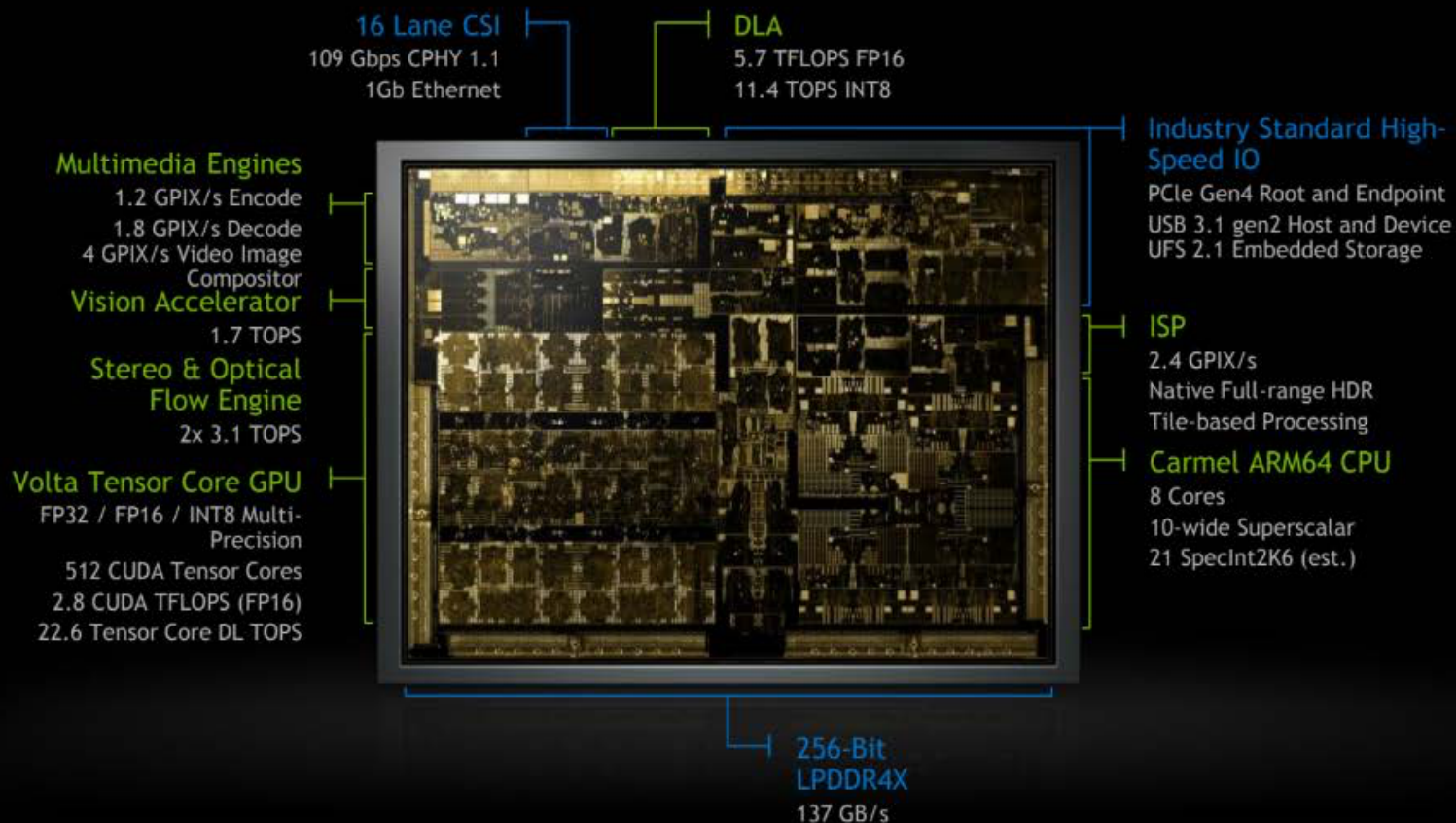






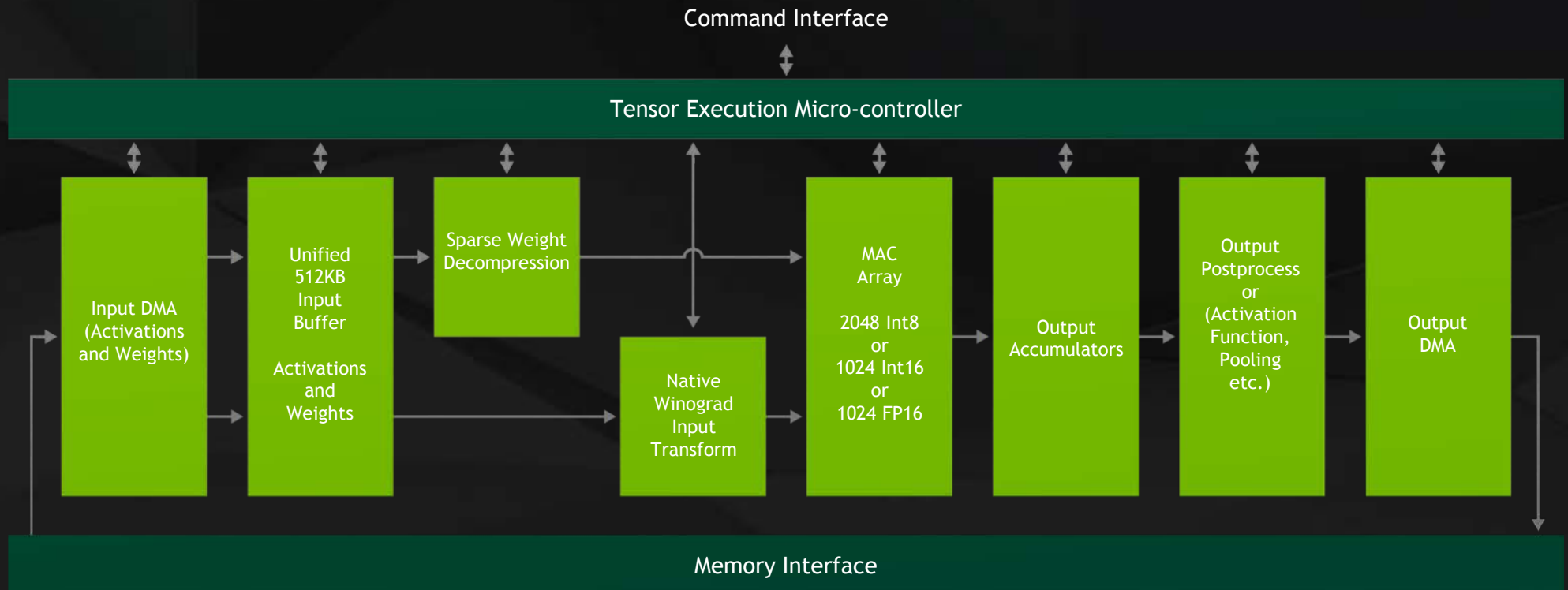
# XAVIER

## World's First Autonomous Machines Processor



Most Complex SOC Ever Made | 9 Billion Transistors, 350mm<sup>2</sup>, 12FFN | ~8,000 Engineering Years

# XAVIER DLA NOW OPEN SOURCE



[WWW.NVDLA.ORG](http://WWW.NVDLA.ORG)



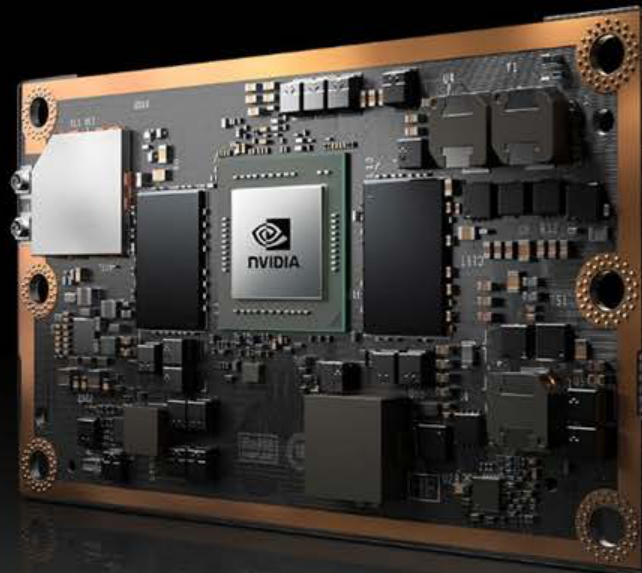
# JETSON TX2

## SUPERCOMPUTER FOR AI AT THE EDGE

2 Core i7 PCs in <10W

256 CUDA cores

>1 TFLOPS



cuDNN, TensorRT

CUDA

Linux, ROS



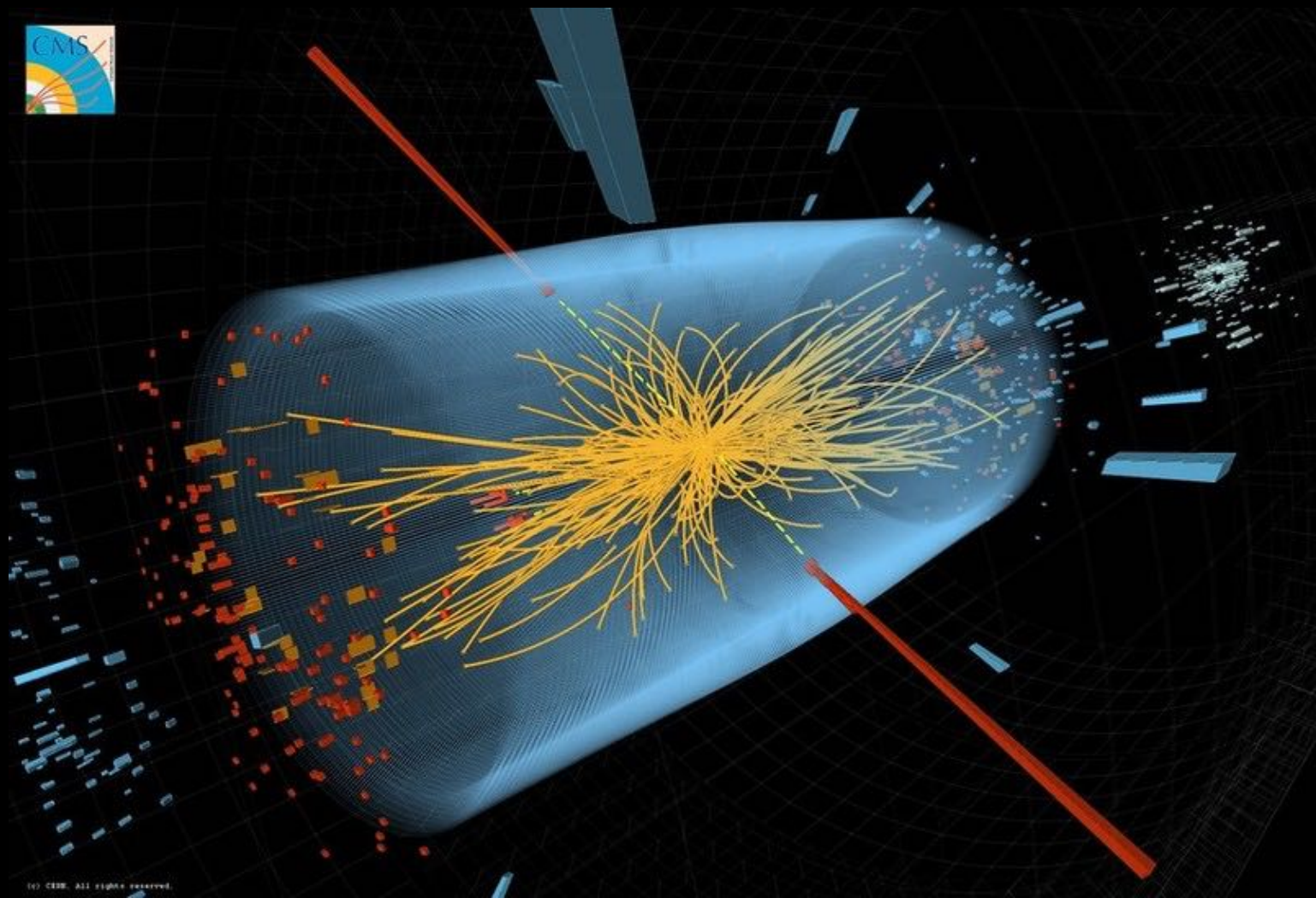
# COMPUTATIONAL SCALE REQUIRED

- 3 million labeled images
- 1 DGX-1 trains 300k labeled images on 1 DNN in 1 day
- 10 DNNs required for self-driving
- 10 parallel experiments at all times
- 100 DGX-1 per car



# TRACK ML

Invaluable  
learnings from  
crowd-sourcing  
WW talent



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## NVIDIA SDK

The Essential Resource for GPU Developers

## NVIDIA SDK

# developer.nvidia.com

### DEEP LEARNING

#### Deep Learning SDK

High-performance tools and libraries for deep learning



### SELF-DRIVING CARS

#### NVIDIA DriveWorks™

Deep learning, HD mapping and supercomputing solutions, from ADAS to fully autonomous



### VIRTUAL REALITY

#### NVIDIA VRWorks™

A comprehensive SDK for VR headsets, games and professional applications



### GAME DEVELOPMENT

#### NVIDIA GameWorks™

Advanced simulation and rendering technology for game development



### ACCELERATED COMPUTING

#### NVIDIA ComputeWorks™

Everything scientists and engineers need to build GPU-accelerated applications



### DESIGN & VISUALIZATION

#### NVIDIA DesignWorks™

Tools and technologies to create professional graphics and advanced rendering applications



### AUTONOMOUS MACHINES

#### NVIDIA JetPack™

Powering breakthroughs in autonomous machines, robotics and embedded computing



### ADDITIONAL RESOURCES

More resources for GPU Developers



# DGX POD ARCHITECTURE

a single data center rack containing up to 9x NVIDIA DGX-1 servers, storage, networking & NVIDIA AI software



Nine DGX-1 servers

12 storage servers

10 GbE (min) storage  
& management  
switch

Mellanox 100 Gpps  
intra-rack high speed  
network switches.





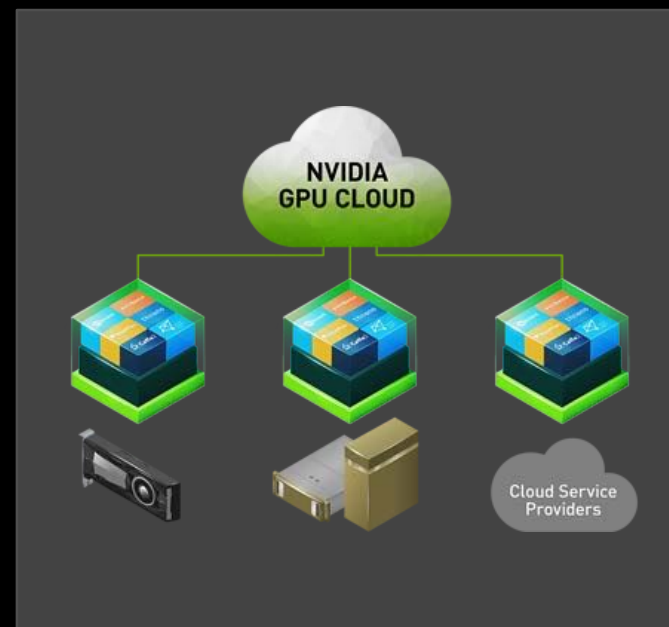
# NEXT STEPS



GTC San Jose | March 26-29 2018  
[www.nvidia.com/en-us/gtc](http://www.nvidia.com/en-us/gtc)



NVIDIA Deep Learning Institute  
[www.nvidia.com/en-us/deep-learning-ai/education](http://www.nvidia.com/en-us/deep-learning-ai/education)



NGC  
[www.nvidia.com/en-us/gpu-cloud](http://www.nvidia.com/en-us/gpu-cloud)

