



# NVIDIA AI LAB- TECHNOLOGY PROPOSAL

*for setting up an AI Lab with GPU's for enabling a participating academic & research institute in India with the technology infrastructure required for course/project work, job-oriented, hands-on training and research facilities in the area of AI with focus on deep learning, machine learning, data science and analytics*

Feb' 2019

# EXECUTIVE SUMMARY

Technology Proposal for setting up an Lab with the technology infrastructure required for course/project work, job-oriented, hands-on training and research facilities in the area of AI

AI Deep Learning is paradigm shifting Technology driving the fourth industrial revolution. It will transform everything

India has a strategic opportunity to be Global Talent provider to the world for AI

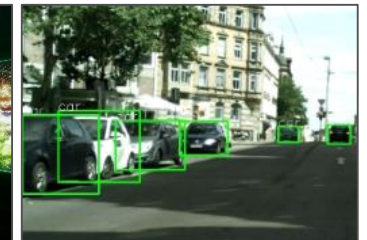
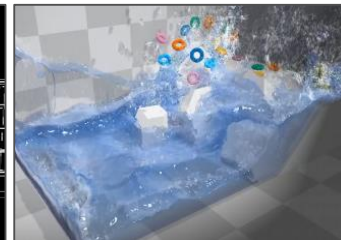
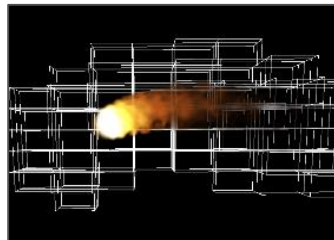
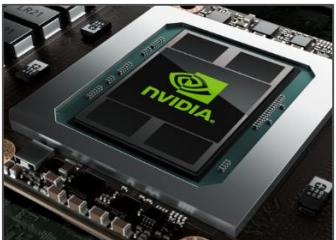
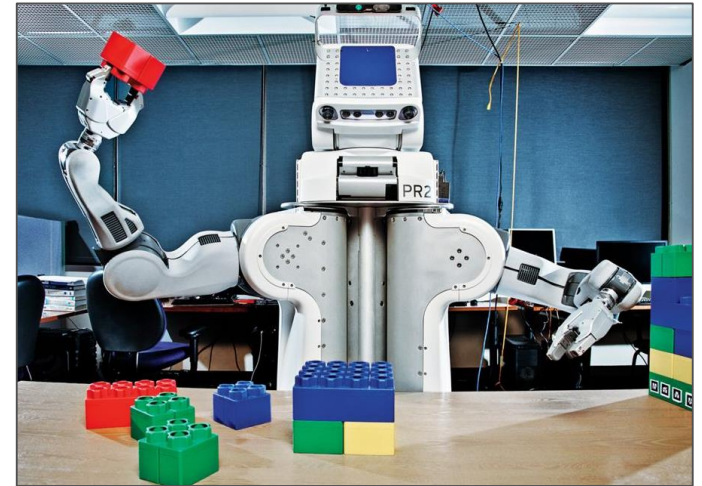
NVIDIA is the Technology leader in AI and is proposing an academic partnership with the participating University/Institute to help it position itself as a leader in the country. Objective is to enable the Institute to offer the very best education, training and research facility in Artificial Intelligence powered by GPU for AI with focus on deep learning, machine learning, data science and analytics

Technology proposal to enable a participating Academic Institute to set up an AI Lab, start electives, short terms courses and take up research efforts in AI; deep learning, machine learning, data science and analytics. Achieve leadership in driving AI Talent enablement and research

The proposal details the gives/gets from Academic Partnership with NVIDIA including co investment for NVIDIA GPU based systems, AI/DL Courseware & Faculty training

Various options for the base compute infrastructure are proposed to enable choice for the participating Academic Institute

# NVIDIA – “THE AI COMPUTING COMPANY”



GPU Computing

Visual Computing

Artificial Intelligence

<http://www.nvidia.in/page/home.html>

# AI Lab

## Partnering Academic Institute's roles and responsibilities

**Partnering Academic Institute will be the 'Hosting Institute' for the 'AI-GPU Lab' & will :**

- ✓ Invest in the required compute infrastructure, set it up and manage it
- ✓ Provide the required space and facility infrastructure for the compute facility, training classes and on premise research efforts
- ✓ Enhance the compute and lab facilities on a need basis
- ✓ Assign lead faculty, academic researchers, and compute & lab infrastructure administrators
- ✓ Build an academic calendar with courses, electives and job oriented training to ensure that students and researchers have the required basic foundations to excel at AI with GPU deep learning
- ✓ Actively explore and establish, partnerships with organisations and research institutions that have a high propensity for AI and deep learning applicability, focus on specific domain and areas and a demand for talent

# VALUE PROPOSITION FOR INSTITUTION

**NVIDIA DLI Teaching Kits, Deep Learning ready training system, Trained faculty & Academic partnership will help break barriers to course introduction.**

## Leadership

*First amongst peers to start AI/Deep Learning Elective courses*

## Student Industry readiness & employability.

*Prepare students for challenges and skills required that an AI driven economy and computing model will demand*

## Opportunity for Industry collaboration

*Industry-Academy collaboration for AI/Deep Learning and Research projects*

## Opportunity for short term training programs

*Opportunity to offer high in demand short term training programs to industry professionals and outside students*

## Faculty opportunity to be DL Ambassadors

*Certified Faculty can enroll for NVIDIA DL Ambassador program. Benefits – Industry exposure, consultancy & training opportunities*

# Academic Partnership with NVIDIA

## Value proposition and benefits for the participating academic institute

NVIDIA will extend co investment for AI/DL CoE establishment against NVIDIA DGX Family of Supercomputing systems and NVIDIA GPU Systems

NVIDIA will provide Teaching Kits from NVIDIA for Deep Learning and Accelerated Computing. This will include Lecture Slides, Videos, Source Code Solutions, e Books, Hands on Lab and coding project covering 40+ hours material to help craft course elective/syllabus

NVIDIA will extend fully optimized AI Software - Deep Learning GPU Training System (DIGITS) including, NVIDIA driver, NVIDIA® CUDA® Toolkit, NVIDIA® DIGITS™ SW, NVIDIA® cuDNN™, Caffe, Theano, Torch, BIDMach, NVIDIA RAPIDS for end-to-end data science and analytics pipelines et.al

NVIDIA will provide 'Train the Trainer' training for Institute faculty on AI/Deep Learning- a minimum of 2 full day workshops on Deep Learning and/or Accelerated Computing

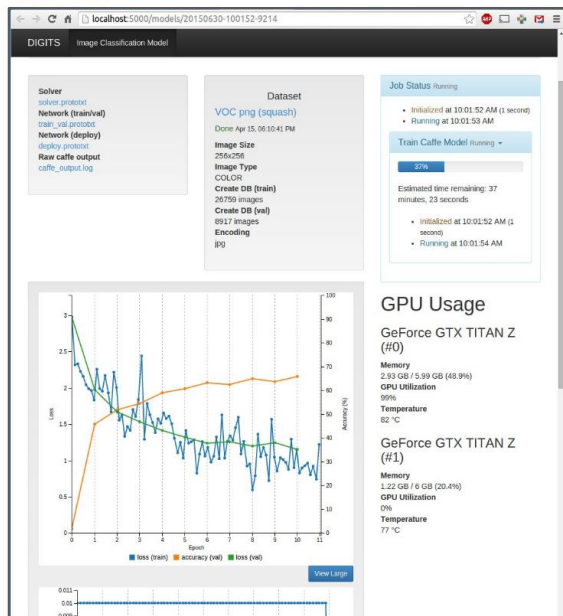
NVIDIA Branding for the proposed for the proposed AI Lab

# DEEP LEARNING SOFTWARE

## NVIDIA DIGITS™

Interactively manage data and train deep learning models for image classification without the need to write code.

[Learn more](#)



[developer.nvidia.com/deep-learning](http://developer.nvidia.com/deep-learning)

## Deep Learning Frameworks

Design and train deep learning models using a high-level interface. Choose a deep learning framework that best suits your needs based on your choice of programming language, platform, and target application.

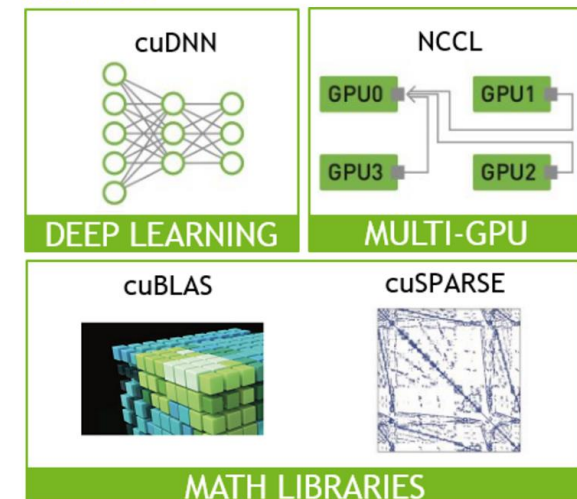
[Learn more](#)



## NVIDIA Deep Learning SDK

This SDK delivers high-performance multi-GPU acceleration and industry-vetted deep learning algorithms, and is designed for easy drop-in acceleration for deep learning frameworks.

[Learn more](#)

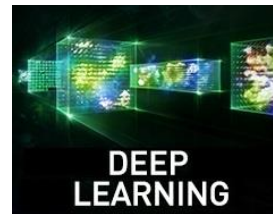


# NVIDIA - ENABLING AI ADOPTION & SKILL BUILD



DEEP  
LEARNING  
INSTITUTE

## Deep Learning Institute (DLI) Teaching Kits



- Introduction to Machine and Deep Learning
- Applied Image Classification
- Applied Object Detection
- Convolutional Neural Networks
- Applied Image Segmentation
- Energy-based Learning
- Unsupervised Learning
- Generative Adversarial Networks
- Recurrent Neural Networks
- Natural Language Processing
- And Many More!



- Introduction to CUDA C
- Memory and Data Locality
- Thread Execution Efficiency
- Memory Access Performance
- Parallel Computation Patterns
- Histogram, Stencil, Reduction, Scan
- Efficient Host-Device Data Transfer
- Related Programming Models
- OpenACC, MPI, OpenCL
- And Many More!



- Intro. to Robotics and Jetson
- ROS Robot O/S
- Sensors
- Computer Vision
- Machine Learning
- Dead Reckoning
- Path Planning
- And Many More!

- Lecture slides
- Lecture videos
- Hands-on labs & coding projects
- Source code solutions
- e-books
- GPU cloud resources