NVIDIA Deep Learning Workshop

Preventing disease, Building smart cities, Revolutionizing analytics. These are just a few things happening today with Artificial Intelligence and, specifically, Deep Learning. Deep Learning was only a theory until recently when teams around the world started using NVIDIA GPUs.

The NVIDIA Deep Learning Institute (DLI) offers hands-on training developers, data scientists, and researchers looking to solve the world's most challenging problems with Deep Learning.

DLI provides training on the latest techniques for designing, training, and deploying neural networks across a variety of application domains.

Class I

Introduction to Deep Learning (Pre-Beginner; for everyone): Learn the most popular software frameworks for Deep Learning. Understand which frameworks suit different types of applications.

Class II

Approaches to object detection (Beginner; basic understanding of DL preferred): Learn how to detect objects using neural networks and real world datasets.

Class III

Neural network deployment (Intermediate; experience in training neural networks using datasets preferred): Learn three approaches for neural network deployment: DIGITS & Caffe, Caffe through it's Python API and NVIDIA TensorRT™

Workshop date: 9th April 2019

Time	Agenda
08:00 AM - 09:00 AM	Registration, Seating & Connect to Wifi
09:00 AM - 11:00 AM	Class I
11:00 AM - 11:30 AM	Coffee/Tea Break

Time	Agenda
11:30 AM - 01:30 PM	Class II
01:30 PM - 02:30 PM	Lunch
02:30 PM – 04:30 PM	Class III
04:30 PM – 05:00 PM	Q&A
05:00 PM - 06:00 PM	Close

SPANNER Workshop

Use of brain-inspired temporal intelligence is increasingly in demand as novel solutions to neural network-based artificial intelligence for providing brain power. This workshop would cover multi-layered spiking neural network architecture inspired by biology in delivering fault-resilience in electronic systems. The architecture uses unsupervised machine intelligence in delivering a homoeostatic spiking activity, providing a reliable pattern identification response in hardware. The use of field-programmable gate array devices in the architecture accelerates the biological scale of response by providing a real-time responsive behavior for tasks where reliability is of paramount importance. Use of spiking neural networks in developing machine intelligence is a sparsely explored area, and the aim of the workshop is to identify understand its limitations and develop plausible countermeasures encouraging its extensive use in today’s artificial intelligence tasks (SPANNER Architecture). The session would also discuss various steps in deducing a compact scalable hardware architecture delivering homeostatic spiking behavior.

Class I

Introduction to Bio-inspired computations and Spiking Neural Network (SNN). Understand the limitations of Spiking Neural Networks. Discuss plausible countermeasures to overcome the issues. Understand the need of FPGAs in SNN implementations.

Class II

Understand various SPANNER Architectures. (a) Fault tolerance mediated by Astrocyte (b) Homeostatic Model, and (c) Engineering Model (intermediate; understanding of FPGA required).

Class III

Navigation task on SPANNER Architecture. Neural network deployment using (Intermediate; experience in using MATLAB required). Understanding deducing the SPANNER Architecture on FPGA. SPANNER FPGA-raspberri- Pi robot navigation demonstration (Video).