Quick Start Guide

Deep Learning Teaching Kit

Introduction

This guide introduces you to the main teaching content of the **Deep Learning Teaching Kit** and provides basic instructions for accessing features of the kit.

NVIDIA has partnered with New York University (NYU) to develop a Deep Learning Teaching Kit covering the academic theory and fundamental application of machine learning (ML) and deep learning (DL) using the Torch computing framework on GPUs. Designed by Professor Yann LeCun, the curriculum addresses a wide range of critical topics, including:

- Introduction to Machine and Deep Learning
- Supervised Learning
- Convolutional and Recurrent Neural Networks
- Energy-based Learning
- Natural Language Processing
- Unsupervised Learning
- Sparse Coding
- And Much More!

All materials are provided in electronic form for ease of use, either as-is or with personal modifications to meet the needs of your particular course. This comprehensive package contains everything needed to teach a full-term curriculum course on machine and deep learning with GPUs.

Does the kit include GPU compute resources?

The Deep Learning Teaching Kit does not currently include a GPU compute resource/platform other than qwikLABS (see “Other Resources” below); however, NVIDIA does plan to include a scalable compute solution in a future kit release. You must therefore have access to NVIDIA CUDA-capable GPU resources, such as GPU cards, or access to remote clusters with GPUs in order to run the lab solutions contained in this Teaching Kit.

NOTE: *You should have received an email invitation to the Deep Learning Teaching Kit’s private BitBucket repository that contains the most recent version of the labs/solutions as well as information on system requirements and how to make use of the labs. Please contact educators@nvidia.com if you have not yet received this email invitation or if it has expired.*

Deep Learning Teaching Kit Content

The Deep Learning Teaching Kit is organized in sequential modules to help you understand a logical order of topics to cover in your course. However, the labs/solutions and quiz/exam problem sets are not tied to any particular module because they are open-ended and/or cover number of module topics. *Additionally, all modules do not require the same amount of time to cover for a given course since some modules contain more content than others.*

Syllabus

Syllabus.pdf outlines the module organization and associated topics, labs and the quiz/exam problem sets.

Lecture Slides

The lecture slides are included in PowerPoint (.ppt) format for in-class lectures.

Labs/solutions

The labs are designed to be open-ended, multidisciplinary, one- to three-week hands-on programming and written assignments for students, which are included as .pdf files. Each lab contains a description of the lab, pointers to benchmark sample code and suggestions on how to evaluate and have students submit solutions. Some programming labs include optimizing a neural network training model and suggest students submit solutions to Kaggle using Kaggle In Class to compare inference accuracy against benchmarks. Please read the Kaggle In Class FAQ for more information on how to set up your course using Kaggle. *Having students submit to Kaggle is **not** a requirement to make use of the labs.*

The most recent versions of the labs/solutions are located in the Bitbucket repository. There you will find source code solutions developed by actual students who took the Deep Learning curriculum course at NYU. Some solutions may require additional, undocumented instructions to properly execute, and may not run perfectly “out-of-box”. Still, they should be useful to motivate students and provide you with examples of successful solutions using a variety of techniques. **Detailed lab solution write-ups are also provided, but for each lab, only the 1st "lab*n_labName*_solution1.pdf" writeup is associated with the source code solution in the Bitbucket repository.**

Quiz/exam Problem Sets

The Quiz/exam Problem Sets are provided in .pdf format and are designed to cover most of the module topics. They should be treated as “final” exams standalone, but problems can be extracted and administered individually at different points during your course.

*As of this first release of the Deep Learning Teaching Kit, solutions to the Quiz/exam Problem Sets are **not** yet included.*

Other Resources

The Teaching Kit also includes tokens for free browser-based access to the cloud-based qwikLABS, which reinforce some of the deep learning concepts presented in the core Teaching Kit. Each qwikLAB is a live, hands-on, self-paced learning environment that includes a set of interactive instructions to walk students through a specific concept. They are timed, meaning that students must complete them within the allotted time.

*QwikLABS are **not** tied directly to any modules or content within the rest of the kit, and as such, should be considered supplemental and used for quick and easy training for yourself and your students.*

Please see *qwickLABS Access.pdf* for more details.