Module 0 - About this course

- 0.0 Welcome!
- 0.1 About this course

总结:

0.0 Welcome!

How to accelerate a deep learning model?

In the previous courses, we learned to use TensorFlow and Deep Leaning, providing some simple and fast-to-run examples. But, have you ever tried to train a complex deep learning model with a huge dataset? You should expect hours, days or weeks sometimes to train a complex model with a large dataset. So, what is the solution?

Well, you should use accelerated hardware, for example, you can use Google's Tensor Processing Unit (TPU) or Nvidia GPU to accelerate your convolutional neural network computations time on the cloud. These chips are particularly designed to support the training of neural networks, as well as the use of trained networks (inference). These accelerating hardware have recently succeeded to reduce the time for training neural network models by several times.

Hello, and welcome! Have you ever tried to train a complex deep learning model with huge data? You should expect hours, days or sometimes weeks, to train a complex model with a large dataset.

In this course we will talk about the hardware that would accelerate building of your deep learning models. We'll also quickly review Deep Learning fundamentals, the pipeline of building a model and its phases. Then, we will discuss each component of the pipeline using a real-world example to understand what the most expensive part is computably. You'll also learn more about the bottleneck of this pipeline, especially why training is very slow and how we can speed it up. Then, we'll discuss how GPU can accelerate the computation, why it is proper for deep learning, and how it outperforms CPUs.

We'll also be reviewing current hardware that accelerates training, such as NVIDIA GPU, Google TPU and FPGA, as well as comparing different options to access GPU, on premise or in the cloud.

And finally we'll be showing you how to distribute the training part of your deep learning on many servers. OK, so let's start.

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0.1 About this course

General Information

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Recommended skills prior to taking this course:

- Python programming

- Deep learning fundamental

- TensorFlow programming

Learning Objectives

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In this course you will learn about:

- Differences between CPUs and GPUs

- Pros and cons of different types of technologies for accelerating deep learning

- To use accelerated hardware to solve the scalability problem in deep learning.

总结:

Syllabus

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Module 1 – Quick review on Deep Learning

- Intro to Deep Learning

- Deep Learning Pipeline

Module 2 – Hardware Accelerated Deep Learning

- How to accelerate a deep learning model?

- Running TensorFlow operations on CPUs vs. GPUs

- Convolutional Neural Networks on GPU

Module 3 – Deep Learning in the Cloud

- Deep Learning in the Cloud

- How does one use a GPU

Module 4 – Advanced Deep Learning

- Distributed Deep Learning

- Object Detection with IBM PowerAI Vision

- Image Classification with IBM PowerAI Vision

Module 5 – Deed Learning Project

- Introduction to Character Modelling

- Recurrent Neural Network on GPU

- Benchmark performance of training your model on GPU versus CPU

总结:

Grading Scheme

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1. The minimum passing mark for the **course** is 60% with the following weights:

   - 10% - Module 1 Review Questions

   - 10% - Module 2 Review Questions

   - 10% - Module 3 Review Questions

   - 10% - Module 4 Review Questions

   - 20% - Project

   - 40% - The Final Exam

2. Review Questions have no time limit. You are encouraged to review the course material to find the answers. Please remember that the Review Questions are worth 40% of your final mark.

3. The final exam has a 1-hour time limit.

4. Attempts are per **question** in both, the Review Questions and the Final Exam:

   - One attempt - For True/False questions

   - Two attempts - For any question other than True/False

5. There are no mark deductions for incorrect attempts.

6. Check your grades in the course at any time by clicking on the "Progress" tab.

总结:

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