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Final Exam
Final Exam Instructions

1. Time allowed: **1 hour**

2. Attempts per question:

- One attempt - For True/False questions

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

3. Clicking the "**Final Check**" button when it appears, means your submission is **FINAL**. You will **NOT** be able to resubmit your answer for that question ever again

IMPORTANT: Do not let the time run out and expect the system to grade you automatically. You must explicitly submit your answers, otherwise they would be marked as incomplete.

Question 1

1/1 point (graded)
Which statement is NOT one of the main reasons for the increased popularity of deep learning today?

○ The dramatic increases in computer processing capabilities.

◉ The increase in the quality of images. ✔

○ The availability of massive amounts of data for training computer systems.

○ The advances in machine learning algorithms and research.

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✔ Correct (1/1 point)

Question 2

1/1 point (graded)

What is the problem with traditional approaches for image classification?

○ Extending the features to other types of images is not easy.

○ The feature selection process is very ineffective.

○ The process of selecting and using the best features is a time-consuming task.

◉ All of the above. ✔

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 3

1/1 point (graded)

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○ No need to find or select features. ▼

○ Working with sound data.

○ Low number of layers.

○ All of the above.

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 4

1/1 point (graded)

Which of the following definitions is what the "inference" part of the deep learning pipeline does?

○ Finding the best feature set for classification.

◉ Using the trained model for classifying a new image based on its similarity to the trained model. ✔

○ Feeding an untrained network with a big dataset of images.

○ Converting the images to a readable and proper format for the network.

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

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What is/are the main reason/s for the deep learning pipeline being so slow?

☑ Training a Deep Neural Network is basically a slow process.

☑ Building a deep neural network is an iterative process for data scientists, that is, it needs optimization and tuning and data scientists need to run it many times to make it ready to be used.

☑ The trained model needs to get updated sometimes, for example, because new data is added to the training set.

✔

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 6

1/1 point (graded)
Why is acceleration of the deep learning pipeline very desirable for data scientists?

○ It reduces the number of pixels that the kernel should add.

○ It makes the inference part of the deep learning pipeline much faster.

○ It causes better feature extraction and selection.

◉ Data scientists can train a model more times and make it much more accurate. ✔

○ None of the above.

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✔ Correct (1/1 point)

Question 7

1/1 point (graded)

Why is "training" of deep learning the most time consuming part of the pipeline?

○ There are many matrix multiplications in the process.

○ Neural Networks have usually many weights, which should get updated in each iteration, and it involves expensive computations.

○ Training is an iterative process.

◉ All of the above. ✔

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 8

1/1 point (graded)

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- ⦿ CPU is good at fetching big amounts of data from memory quickly. ✔

- ○ CPU runs tasks sequentially.

- ○ CPU is responsible for executing a sequence of stored instructions, for example, multiplications.

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 9

1/1 point (graded)
Which statement best describes GPU?

- ○ A solution for running a Recurrent Neural Network in deep learning.

- ○ Part of a computer system that is known as the processor or microprocessor.

- ⦿ A chip (processor) traditionally designed and specialized for rendering images, animations and video for the computer's screen. ✔

- ○ The core of a CPU.

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

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What is NOT TRUE about GPUs?

○ GPUs have many cores, sometimes up to 1000 cores.

◉ x86 is one of the prevalent GPUs by Intel. ✔

○ GPUs can handle many computations.

○ GPUs are good at fetching large amounts of memory.

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 11

1/1 point (graded)
Why is GPU much better for deep learning than CPU?

○ CPUs are not optimized and not the proper use for fetching high dimensional matrices.

○ Deep Neural Networks need a heavy matrix for multiplication, and GPUs can do it in parallel.

○ A Deep Neural Network needs to fetch input images as matrices from main memory, and GPUs are good at fetching big chunks of memory.

◉ All of the above. ✔

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✔ Correct (1/1 point)

Question 12

1/1 point (graded)

"NVIDIA is one of the main vendors of GPU offered with CUDA software" True or False?

- ⦿ TRUE ✔

- ○ FALSE

Submit   You have used 1 of 1 attempt

✔ Correct (1/1 point)

Question 13

1/1 point (graded)

What is CUDA?

- ⦿ A high level language, which helps you write programs for NVIDIA GPU ✔

- ○ A software on top of AMD cards to make it faster

- ○ A accelerating hardware that have recently succeeded in reducing the training time by several times over.

- ○ All of the above

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✔ Correct (1/1 point)

Question 14

1/1 point (graded)

Which one is NOT a hardware accelerator for training of deep learning?

○ FPGAs

○ AMD cards

○ Tensorflow Processing Units (TPUs)

○ NVIDIA GPUs

◉ OpenCL ✔

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 15

1/1 point (graded)

"Tensorflow Processing Units (TPUs) are Google's hardware accelerator solution developed specifically for TensorFlow and Google's open-source machine learning framework." TRUE or FALSE?

◉ TRUE ✔

○ FALSE

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✔ Correct (1/1 point)

Question 16

1/1 point (graded)

What is TRUE about the limitations of using GPUs as hardware accelerators for deep learning? (Select one or more)

- ☐ GPUs are not very fast for data parallelism, which is a must in deep neural networks.

- ☑ GPUs have a limited memory capacity (currently up to 16 GB) so this is not practical for very large datasets.

- ☑ You cannot easily buy GPUs and embed them into your local machine because of hardware dependencies and incompatibilities.

- ☐ GPUs are not compatible with CPUs.

✔

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 17

1/1 point (graded)

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○ GPU services provided by cloud providers

○ A cluster of GPUs in the cloud

○ Personal computers with an embedded GPU

◉ All of the above ✔

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 18

1/1 point (graded)

Is this statement about using personal computers with an embedded GPU for deep learning problems TRUE or FALSE? "A laptop with a recent NVIDIA GPU is not usually enough to solve real deep learning problems. In this case, you need to scale down the dataset or the model, which often delivers bad results."

○ FALSE

◉ TRUE ✔

Submit   You have used 1 of 1 attempt

✔ Correct (1/1 point)

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○ They are properly used only for experiments with sample data to verify many scenarios before going full scale.

◉ You need to upload all your data on the cloud and you may not feel comfortable uploading it into public clouds. ✔

○ You cannot find services that offer multi-GPU access.

○ They cannot run as fast as personal computers.

Submit   You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 20

1/1 point (graded)
Which statement is NOT TRUE about PowerAI:

○ On the PowerAI platform, NVLink connections between GPUs reduce GPU wait time.

◉ PowerAI handles Big Data by transfering all data into GPUs. ✔

○ On the PowerAI platform, full NVLink connectivity between CPU and GPU allows a faster way to "reload" data into GPU.

○ PowerAI takes advantage of NVLink for faster GPU-GPU communication.

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✔ Correct (1/1 point)