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EXAM PROFESSIONAL DATA ENGINEER TOPIC 1 QUESTION 203 DISCUSSION

Actual exam question from Google's Professional Data Engineer
Question #: 203
Topic #: 1
[All Professional Data Engineer Questions]

A TensorFlow machine learning model on Compute Engine virtual machines (n2-standard-32) takes two days to complete training. The model has custom TensorFlow operations that must run partially on a CPU. You want to reduce the training time in a cost-effective manner. What should you do?

A. Change the VM type to n2-highmem-32.

B. Change the VM type to e2-standard-32.

C. Train the model using a VM with a GPU hardware accelerator.

D. Train the model using a VM with a TPU hardware accelerator.

Show Suggested Answer

by gudiking at *Nov. 29, 2022, 2:15 p.m.*

Comments

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MaxNRG Highly Voted 10 months, 2 weeks ago

Selected Answer: C

The best way to reduce the TensorFlow training time in a cost-effective manner is to use a VM with a GPU hardware accelerator. TensorFlow can take advantage of GPUs to significantly speed up training time for many models.

Specifically, option C is the best choice.

Changing the VM to another standard type like n2-highmem-32 or e2-standard-32 (options A and B) may provide some improvement, but likely not a significant speedup.

Using a TPU (option D) could speed up training, but TPUs are more costly than GPUs. For a cost-effective solution, GPU acceleration provides the best performance per dollar.

Since the model must run partially on CPUs, a VM instance with GPUs added will allow TensorFlow to offload appropriate operations to the GPUs while keeping CPU-specific operations on the CPU. This can provide a significant reduction in training time for many common TensorFlow models while keeping costs reasonable

upvoted 5 times

jkhong Highly Voted 1 year, 10 months ago

Selected Answer: C

Cost effective - among the choices, it is cheaper to have a temporary accelerator instead of increasing our VM cost for an indefinite amount of time
D -> TPU accelerator cannot support custom operations

upvoted 5 times

wences Most Recent 6 months ago

Selected Answer: C

key pjrse is "run partially on a CPU" from https://cloud.google.com/tpu/docs/intro-to-tpu#when_to_use_tpus refers to GPU

upvoted 1 times

spicebits 12 months ago

Selected Answer: C

https://cloud.google.com/tpu/docs/intro-to-tpu#when_to_use_tpus

upvoted 4 times

AzureDP900 1 year, 10 months ago

C. Train the model using a VM with a GPU hardware accelerator.

upvoted 1 times

Atnafu 1 year, 11 months ago

C
https://cloud.google.com/tpu/docs/tpus#when_to_use_tpus:~:text=Models%20with%20a%20significant%20number%20of%20custom%20TensorFlow%20operations%20that%20must%20run%20at%20least%20partially%20on%20CPUs

upvoted 1 times

Atnafu 1 year, 10 months ago

The model has custom TensorFlow operations that must run partially on a CPU. is the key for GPU

upvoted 3 times

zellck 1 year, 11 months ago

Selected Answer: C

C is the answer.

https://cloud.google.com/tpu/docs/tpus#when_to_use_tpus
GPUs
- Models with a significant number of custom TensorFlow operations that must run at least partially on CPUs

upvoted 4 times

gudiking 1 year, 11 months ago

Selected Answer: C

I agree with C, for choosing a GPU one of the cases says:
"Models with a significant number of custom TensorFlow operations that must run at least partially on CPUs"
https://cloud.google.com/tpu/docs/tpus#when_to_use_tpus

upvoted 1 times

gudiking 1 year, 11 months ago

C is not cost-effective, so I stand corrected. I do not know the answer.

upvoted 1 times

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