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📄 **EXAM PROFESSIONAL MACHINE LEARNING ENGINEER TOPIC 1 QUESTION 171 DISCUSSI...**

Actual exam question from Google's Professional Machine Learning Engineer
Question #: 171
Topic #: 1

[All Professional Machine Learning Engineer Questions]

You work with a team of researchers to develop state-of-the-art algorithms for financial analysis. Your team develops and debugs complex models in TensorFlow. You want to maintain the ease of debugging while also reducing the model training time. How should you set up your training environment?

A. Configure a v3-8 TPU VM. SSH into the VM to train and debug the model.

B. Configure a v3-8 TPU node. Use Cloud Shell to SSH into the Host VM to train and debug the model.

C. Configure a n1 -standard-4 VM with 4 NVIDIA P100 GPUs. SSH into the VM and use ParameterServerStraregv to train the model.

D. Configure a n1-standard-4 VM with 4 NVIDIA P100 GPUs. SSH into the VM and use MultiWorkerMirroredStrategy to train the model.

Show Suggested Answer

by 👤 **b1a8fae** at *Jan. 8, 2024, 4:51 p.m.*

Comments

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baimus 1 month, 1 week ago

MultiWorkerMirroredStrategy is for multiple workers, each with one or more GPUs. For a single worker/vm with multiple GPUs it would be MirroredStrategy, so D is definitely wrong.
C is wrong as that is a totally unrelated concept, B is probably wrong as it's much less convenient than using a terminal (B vs A is tough call, but A replicates their existing setup most closely)

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AzureDP900 4 months ago

Option D Configure a n1-standard-4 VM with 4 NVIDIA P100 GPUs. SSH into the VM and use MultiWorkerMirroredStrategy to train the model. is indeed a correct answer.
MultiWorkerMirroredStrategy: This strategy allows you to distribute your training process across multiple machines (in this case, the 4 NVIDIA P100 GPUs) while maintaining synchronization between them.
NVIDIA P100 GPUs: These high-performance GPUs are well-suited for computationally intensive tasks like deep learning model training.

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inc_dev_ml_001 4 months ago

Selected Answer: A

It says "state-of-art" and TPU is more recent than GPU. No need to log using Cloud Shell into VM and there's no mention about cost. So TPU + SSH directly into VM could be the choice.

👍 ↩ ⚑ upvoted 2 times

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fitri001 6 months ago

Selected Answer: D

Debugging Ease: SSHing into a VM provides a familiar environment for researchers to use familiar debugging tools within the VM for their complex TensorFlow models. This maintains ease of debugging compared to TPUs which require special considerations.
Faster Training: Utilizing 4 NVIDIA P100 GPUs within the VM leverages parallel processing capabilities to significantly accelerate training compared to a CPU-only VM.

👍 ↩ ⚑ upvoted 2 times

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pinimichele01 6 months, 2 weeks ago

Selected Answer: D

the need to balance ease of debugging and reduce training time

👍 ↩ ⚑ upvoted 2 times

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guilhermebutzke 8 months, 2 weeks ago

Selected Answer: D

My choice is D.

While TPUs offer faster training, they can be less convenient for debugging due to limitations in tooling and visualization, such as the lack of support for some debuggers and limited visualization options.

Comparing options C and D, MultiWorkerMirroredStrategy uses synchronous distributed training across multiple workers, making it easier to inspect intermediate states and variables during debugging. In contrast, ParameterServerStraregv utilizes asynchronous multi-machine training, which can be less intuitive to debug. However, it's important to note that ParameterServerStraregv might be more efficient for training extremely large models. Therefore, considering the specific need for ease of debugging in this scenario, MultiWorkerMirroredStrategy appears to be the more suitable choice.

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pikachu007 9 months, 2 weeks ago

Selected Answer: D

Given the need to balance ease of debugging and reduce training time for complex models in TensorFlow, option D - "Configure an n1-standard-4 VM with 4 NVIDIA P100 GPUs. SSH into the VM and use MultiWorkerMirroredStrategy to train the model" appears to be more suitable. This setup utilizes NVIDIA P100 GPUs for computational power and employs MultiWorkerMirroredStrategy, which can distribute the workload across GPUs efficiently, potentially reducing training time while maintaining a relatively straightforward environment for debugging.

👍 ↩ ⚑ upvoted 4 times

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b1a8fae 9 months, 2 weeks ago

Selected Answer: D

D.

Cannot be B, because node architecture make it difficult to debug: https://cloud.google.com/tpu/docs/system-architecture-tpu-vm#tpu-node-arch

While TPUs are faster than GPUs for certain scenarios, and never slower, they are less easy to debug. Parallelizing the training across different workers (GPUs) using MultiWorkerMirroredStrategy makes most sense to me.

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