

华为昇腾平台模型迁移测试

华为平台

模型训练后迁移回N卡平台

遇到的问题

训练llama3中遇到的问题

华为平台

已测试的模型	推理	微调	改动量
Cerebrum-1.0-7b	√		极少
c4ai-command-r-v01	x		模型太大，需要单独做分配。
chatglm3-6b	√		极少
deepseek-vl-1.3b-base	√		极少
gpt2	√		极少
Mistral-7B-Instruct-v0.2	√	√	极少
moondream2	√		极少

llama3	√	√	极少（通过mindspore跑通）
superprompt-v1	√		极少
tinyllama 1.1B	√		极少
Yi-9B-200K	√		极少

模型训练后迁移回N卡平台

测试过将Mistral模型在华为平台上进行sft训练后，可以直接将模型权重迁移回A100上并且成功跑通了推理。

迁移过程如下

获取模型<https://modelscope.cn/models/AI-ModelScope/Mistral-7B-Instruct-v0.2/summary>

获取llama factory库<https://github.com/hiyouga/LLaMA-Factory>

修改好配置文件ds_config_zero2.json

```
{
  "train_batch_size": "auto",
  "train_micro_batch_size_per_gpu": "auto",
  "gradient_accumulation_steps": "auto",
  "gradient_clipping": "auto",
  "zero_allow_untested_optimizer": true,
  "fp16": {
    "enabled": "auto",
    "loss_scale": 0,
    "loss_scale_window": 1000,
    "initial_scale_power": 16,
```

```

"hysteresis": 2,
"min_loss_scale": 1
},
"bf16": {
"enabled": "auto"
},
"zero_optimization": {
"stage": 2,
"allgather_partitions": true,
"allgather_bucket_size": 5e8,
"overlap_comm": true,
"reduce_scatter": true,
"reduce_bucket_size": 5e8,
"contiguous_gradients": true,
"round_robin_gradients": true
}
}

```

进行训练

```

deepspeed --num_gpus 8 src/train_bash.py \
--ddp_timeout 180000000 \
--deepspeed /root/build_env/deepspeed_config/ds_config_zero2.json \
--stage sft \
--do_train \
--model_name_or_path /root/build_env/AI-ModelScope/Mistral-7B-Instruct-v02 \
--dataset alpaca_gpt4_en \
--template default \
--finetuning_type full \
--lora_target q_proj,v_proj \

```

```
--output_dir path_to_sft_checkpoint \  
--overwrite_cache \  
--per_device_train_batch_size 4 \  
--gradient_accumulation_steps 4 \  
--lr_scheduler_type cosine \  
--logging_steps 10 \  
--save_steps 1000 \  
--learning_rate 5e-5 \  
--num_train_epochs 3.0 \  
--plot_loss \  
--fp16
```

训练完成后找到保存的模型权重将其传到A100服务器上

直接采用推理的代码即可跑通模型推理

遇到的问题

遇到的一个典型问题

TypeError: new() received an invalid combination of arguments – got (Tensor, requires_grad=bool), but expected one of:

- (*, torch.device device)

didn't match because some of the keywords were incorrect: requires_grad

- (torch.Storage storage)
- (Tensor other)
- (tuple of ints size, *, torch.device device)
- (object data, *, torch.device device)

在对模型进行微调训练，以及TinyLlama进行推理时都遇到过（至少遇到过4，5次）。只要用到了accelerate库就很容易报这个错。判断大概率是平台对accelerate库支持不好导致，也只在华为社区看到这个issue的讨论。

跑c4ai推理时在导入checkpoint时卡住

```
[PyTorch-2.1.0] [root@ec541f2ce6618 to test_d4ai]# python run_model.py
DrmVmgGetConsoleLogLevel failed. (g.consoleLevels#3)
[ERROR] ATTRACE(210,python):2024-05-07-12:59:16.197.300 [trace_driver_api.c:57] [tid:210] get platform info failed, drvErr=87.
[EVENT] PROFILING(210,python):2024-05-07-12:59:16.210.841 [msprof_callback_impl.cpp:334] >>> (tid:210) Started to register profiling ctrl callback.
[EVENT] PROFILING(210,python):2024-05-07-12:59:16.211.132 [msprof_callback_impl.cpp:341] >>> (tid:210) Started to register profiling hash id callback.
[INFO] PROFILING(210,python):2024-05-07-12:59:16.211.234 [prof_atls_plugin.cpp:83] >>> (tid:210) RegisterProfileCallback, callback type is 7
[INFO] PROFILING(210,python):2024-05-07-12:59:16.211.205 [msprof_callback_impl.cpp:246] >>> (tid:210) Started to register profiling enable host freq callback.
[INFO] PROFILING(210,python):2024-05-07-12:59:16.211.377 [prof_atls_plugin.cpp:83] >>> (tid:210) RegisterProfileCallback, callback type is 8
[ERROR] RUNTIME(210,python):2024-05-07-12:59:16.367.602 [runtime.cc:617]210 CheckHaveDevice:Call halGetDeviceInfo failed: drvRet=87, module_type=0, info type=1.
[INFO] PROFILING(210,python):2024-05-07-12:59:16.367.908 [prof_atls_plugin.cpp:160] >>> (tid:210) Module[7] register callback of ctrl handle.
[ERROR] RUNTIME(210,python):2024-05-07-12:59:16.368.739 [driver.cc:65]210 GetDeviceCount:Call drvGetDevNum, drvRetCode=87.
[ERROR] RUNTIME(210,python):2024-05-07-12:59:16.368.831 [api_c.cc:17]11210 rtGetDeviceCount:ErrCode=507899, desc=[driver error:internal error], InnerCode=0x7020010
[ERROR] RUNTIME(210,python):2024-05-07-12:59:16.368.908 [error_message_manage.cc:53]210 FuncErrorReason:report error module_type=3, module_name=EE8888
[ERROR] RUNTIME(210,python):2024-05-07-12:59:16.368.981 [error_message_manage.cc:53]210 FuncErrorReason:rtGetDeviceCount execute failed, reason=[driver error:internal error]
[ERROR] ASCENDCL(210,python):2024-05-07-12:59:16.368.686 [device.cc:34]210 aclrtGetDeviceCount: get device count failed, runtime result = 507899.
[ERROR] APP(210,python):2024-05-07-12:59:16.369.180 [log_inner.cpp:76]210 NPUFunctions.cp:device_count:17: "[PTA]: get device count of NPU failed"
/home/ma-user/anaconda3/envs/PyTorch-2.1.0/lib/python3.9/site-packages/torch_npu/contrib/transfer_to_npu.py:208: ImportWarning:
*****
The torch.Tensor.cuda and torch.nn.Module.cuda are replaced with torch.Tensor.npu and torch.nn.Module.npu now..
The torch.cuda.DoubleTensor is replaced with torch.npu.FloatTensor cause the double type is not supported now..
The backend in torch.distributed.init_process_group set to hccl now..
The torch.cuda.* and torch.cuda.amp.* are replaced with torch.npu.* and torch.npu.amp.* now..
The device parameters have been replaced with npu in the function below:
torch.nn.functional, torch.nn.functional, torch.rand, torch.full_like, torch.ones_like, torch.randn_like, torch.randnperm, torch.arange, torch.frombuffer, torch.normal, torch.empty_per_channel,
fine_quantized, torch.empty_strided, torch.empty_like, torch.scalar_tensor, torch.tril_indices, torch.bartlett_window, torch.ones, torch.sparse_coo_tensor, torch.randn, torch.kaiser_window, torch.tensor,
to_rch_triu_indices, torch.as_tensor, torch.zeros, torch.randn_int, torch.full, torch.eye, torch.sparse_csr_tensor, torch.empty, torch.sparse_coo_tensor, torch.empty, torch.blackman_window, torch.zeros_1,
torch.range, torch.arange, torch.sparse_csr_tensor, torch.randn_like, torch.from_file, torch.cudnn_int_dropout_state, torch.empty_affine_quantized, torch.linspace, torch.hamming_window, torch.empty_quantized,
torch.pin_memory, torch.autocast, torch.load, torch.tensor.new_empty, torch.Tensor.new_empty_strided, torch.Tensor.new_full, torch.Tensor.new_ones, torch.Tensor.new_tensor, torch.Tensor.new_zeros, torch.Tenso
*****
warnings.warn(msg, ImportWarning)
[ERROR] RUNTIME(210,python):2024-05-07-12:59:19.299.611 [driver.cc:65]210 GetDeviceCount:Call drvGetDevNum, drvRetCode=87.
[ERROR] RUNTIME(210,python):2024-05-07-12:59:19.299.269 [api_c.cc:17]11210 rtGetDeviceCount:ErrCode=507899, desc=[driver error:internal error], InnerCode=0x7020010
[ERROR] RUNTIME(210,python):2024-05-07-12:59:19.299.294 [error_message_manage.cc:53]210 FuncErrorReason:report error module_type=3, module_name=EE8888
[ERROR] RUNTIME(210,python):2024-05-07-12:59:19.299.374 [error_message_manage.cc:53]210 FuncErrorReason:rtGetDeviceCount execute failed, reason=[driver error:internal error]
[ERROR] ASCENDCL(210,python):2024-05-07-12:59:19.299.480 [device.cc:34]210 aclrtGetDeviceCount: get device count failed, runtime result = 507899.
[ERROR] APP(210,python):2024-05-07-12:59:19.299.577 [log_inner.cpp:76]210 NPUFunctions.cp:device_count:17: "[PTA]: get device count of NPU failed"
Special tokens have been added in the vocabulary, make sure the associated word embeddings are fine-tuned or trained.
Loading checkpoint stars: 100%
[15/15 [00:33:00:00, 2.23s/it]
```

此原因是因为模型权重太大，无法单卡推理。多卡推理需要单独设置切分策略。

跑完Mistral-7B-Instruct的lora微调后，merge权重时报错

TypeError: new() received an invalid combination of arguments – got (Tensor, requires_grad=bool), but expected one of:

- (*, torch.device device)

didn't match because some of the keywords were incorrect: `requires_grad`

- (torch.Storage storage)
- (Tensor other)
- (tuple of ints size, *, torch.device device)
- (object data, *, torch.device device)

accelerate相关库支持不到位导致。

训练llama3中遇到的问题

主要参考这篇教程实现

<https://gitee.com/mindspore/mindformers/blob/dev/research/llama3/llama3.md#https://gitee.com/link?target=https%3A%2F%2Fhuggingface.co%2Fmeta-llama%2FMeta-Llama-3-8B>

在权重转换以及训练步骤都遇到此报错：

ImportError: cannot import name 'swap_cache' from 'mindspore. c_expression'

应该是由于代码版本升级导致的bug，直接注释掉源码中的导入语句后解决（经测试并不影响后续的模式训练和推理）

可以参考此issue <https://gitee.com/mindspore/mindformers/issues/I9NL4D>

对于模型推理速度过慢的解答：

因为训练的权重用的bf16，而推理目前只支持f16，因此在进行推理前需要进行权重的转换。假如训练也用f16就不需要转换。同时，推理时将权重转换好后在多轮对话式推理速度正常。