mindspore.mint 接口测试任务 36 测试文档

1. 测试环境

硬件环境：
Ascend D910B

软件环境：
python 3.11.11
mindspore 2.5.0
torch 2.4.0
torch-npu 2.4.0.post2
numpy 1.26.4

2. 测试结果

2.1 mindspore.mint.nn.functional.binary_cross_entropy

问题 1：
支持输入类型不足：
pytorch - float16, float32, float64，bfloat16
mindspore - float16, float32, bfloat16 （和文档一致），但不支持 float64
对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

shape = (3, 4)
np_input = np.random.randn(*shape).astype(np.float32)
np_target = np.random.randn(*shape).astype(np.float32)
ms_dtype = ms.float64
try:
    # MindSpore
    ms_input = Tensor(np_input, dtype=ms_dtype)
    ms_target = Tensor(np_target, dtype=ms_dtype)
    ms_output = mint_F.binary_cross_entropy(ms_input, ms_target,
reduction='mean')
    print(f"MindSpore 输出: {ms_output.asnumpy().item()}, shape:
{ms_output.shape}")
    ms_support = "支持"
except Exception as e:
```

```
    print(f"MindSpore  错误: {str(e)}")
    ms_support = "不支持"

print(f"PyTorch: {pt_support}, MindSpore: {ms_support}")
```

2.2 mindspore.mint.nn.functional.binary_cross_entropy_with_logits

问题 1：

支持输入类型不足：

pytorch - float16, float32, float64，bfloat16

mindspore - float16, float32, bfloat16 （和文档一致），但不支持 float64

对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

shape = (3, 4)
np_input = np.random.randn(*shape).astype(np.float32)
np_target = np.random.randn(*shape).astype(np.float32)
ms_dtype = ms.float64
try:
    # MindSpore
    ms_input = Tensor(np_input, dtype=ms_dtype)
    ms_target = Tensor(np_target, dtype=ms_dtype)
    ms_output = mint_F.binary_cross_entropy_with_logits(ms_input, ms_target,
reduction='mean')
    print(f"MindSpore  输出: {ms_output.asnumpy().item()}, shape:
{ms_output.shape}")
    ms_support = "支持"
except Exception as e:
    print(f"MindSpore  错误: {type(e).__name__}: {str(e)}")
    ms_support = "不支持"
```

问题 2：

pos_weight shape 与 target shape 不一致时 mindspore 直到使用输出值时才报错

对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
```

```
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

ms_input = Tensor(np.random.randn(2, 3), dtype=ms.float32)
ms_target = Tensor(np.random.rand(2, 3), dtype=ms.float32)
ms_wrong_pos_weight = Tensor(np.random.rand(2, 4), dtype=ms.float32)  # 错误的尺寸
try:
    ms_output = mint_F.binary_cross_entropy_with_logits(ms_input, ms_target, pos_weight=ms_wrong_pos_weight)
    print("MindSpore 支持不匹配的 pos_weight 尺寸")
    print(f"结果为{ms_output}") # 这一行才报错
except Exception as e:
    print(f"MindSpore 错误: {str(e)}")
```

2.3 mindspore.mint.nn.functional.l1_loss

问题 1：

支持输入类型不足：

pytorch - float16, float32, float64，bfloat16

mindspore - float16, float32, bfloat16，但不支持 float64

对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

shape = (3, 4)
np_input = np.random.randn(*shape).astype(np.float32)
np_target = np.random.randn(*shape).astype(np.float32)
ms_dtype = ms.float64
try:
    # MindSpore
    ms_input = Tensor(np_input, dtype=ms_dtype)
    ms_target = Tensor(np_target, dtype=ms_dtype)
    ms_output = mint_F.l1_loss(ms_input, ms_target, reduction='mean')
    print(f"MindSpore  输出: {ms_output.asnumpy().item()}, shape: {ms_output.shape}")
    ms_support = "支持"
except Exception as e:
    print(f"MindSpore  错误: {type(e).__name__}: {str(e)}")
```

```
    ms_support = "不支持"
```

2.4 mindspore.mint.nn.functional.mse_loss

问题 1：

支持输入类型不足：

pytorch - float16, float32, float64

mindspore - float16, float32, bfloat16，但不支持 float64

对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

shape = (3, 4)
np_input = np.random.randn(*shape).astype(np.float32)
np_target = np.random.randn(*shape).astype(np.float32)
ms_dtype = ms.float64
try:
    # 首先尝试 mint.nn.functional.mse_loss
    ms_input = Tensor(np_input, dtype=ms_dtype)
    ms_target = Tensor(np_target, dtype=ms_dtype)
    ms_output = mint_F.mse_loss(ms_input, ms_target, reduction='mean')
    print(f"MindSpore 输出 : {ms_output.asnumpy().item()}, shape:
{ms_output.shape}")
    ms_support = "支持"
except Exception as e:
    print(f"MindSpore 错误: {type(e).__name__}: {str(e)}")
    ms_support = "不支持"
```

2.5 mindspore.mint.nn.functional.grid_sample

问题 1：

支持模式不足：

pytorch - bilinear, nearest, bicubic

mindspore - bilinear, nearest

对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F
```

```
try:
    ms_output = mint_F.grid_sample(ms_input, ms_grid, mode='bicubic',
padding_mode='zeros', align_corners=False)
    print(f"MindSpore mode='{mode}': 支持")
    ms_mode_supported = True
except Exception as e:
    print(f"MindSpore 错误: {str(e)}")
    ms_mode_supported = False
```

问题 2：
grid 参数最后一维不为 2 时，mindspore 直到使用输出值时才报错
对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

ms_output = mint_F.grid_sample(ms_input, ms_wrong_grid_dim)
print("MindSpore 支持网格维度不是 2")
print(ms_output)     # 这一行才报错
```

问题 3：
padding_mode 参数的报错信息不足，例如
PyTorch 错误: ValueError: nn.functional.grid_sample(): expected padding_mode to be 'zeros', 'border', or 'reflection', but got: 'invalid_padding'
MindSpore 错误：ValueError: Failed to convert the value "invalid_padding" of input 'padding_mode' of 'GridSampler2D' to enum.

PyTorch 错误: ValueError: nn.functional.grid_sample(): expected mode to be 'bilinear', 'nearest' or 'bicubic', but got: 'invalid_mode'
MindSpore 错误：ValueError: Failed to convert the value "invalid_mode" of input 'interpolation_mode' of 'GridSampler2D' to enum.
对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F
```

```
batch_size = 2
channels = 3
height = 8
width = 8
grid_height = 6
grid_width = 6

np_input = np.random.randn(batch_size, channels, height, width).astype(np.float32)
np_grid = np.random.uniform(-1, 1, (batch_size, grid_height, grid_width,
2)).astype(np.float32)
ms_input = Tensor(np_input, dtype=ms.float32)
ms_grid = Tensor(np_grid, dtype=ms.float32)

ms_output = mint_F.grid_sample(ms_input, ms_grid,
padding_mode='invalid_padding')
```

问题 4：不支持 bfloat16，但执行命令时不报错，却会导致后续命令报错
对应测试代码：

```
import numpy as np
import torch
import torch.nn.functional as F
import mindspore as ms
from mindspore import Tensor
import mindspore.mint.nn.functional as mint_F

def test_bfloat16():
    batch_size = 2
    channels = 3
    height = 8
    width = 8
    grid_height = 6
    grid_width = 6
    np_input = np.random.randn(batch_size, channels, height,
width).astype(np.float32)
    np_grid = np.random.uniform(-1, 1, (batch_size, grid_height, grid_width,
2)).astype(np.float32)
    ms_dtype=ms.bfloat16
    try:
        # 首先尝试 mint.nn.functional.grid_sample
        ms_input = Tensor(np_input, dtype=ms_dtype)
        ms_grid = Tensor(np_grid, dtype=ms_dtype)
```

```
        ms_output = mint_F.grid_sample(ms_input, ms_grid, mode='bilinear',
padding_mode='zeros', align_corners=False)
        print(f"MindSpore  输出  ({'mint API' if ms_using_mint else '替代实现'}):
shape={ms_output.shape}")
        ms_support = "支持"
    except Exception as e:
        print(f"MindSpore  错误: {type(e).__name__}: {str(e)}")
        ms_support = "不支持"

    input_shape = (2, 1, 8, 8),       # 单通道

    grid_shape = (2, 6, 6, 2)

    print(f"\n 测试输入尺寸: 输入={input_shape}, 网格={grid_shape}")

    # 生成随机输入
    np_input = np.random.randn(*input_shape).astype(np.float32)
    np_grid = np.random.uniform(-1, 1, grid_shape).astype(np.float32)

    # MindSpore
    ms_input = Tensor(np_input, dtype=ms.float32)
    ms_grid = Tensor(np_grid, dtype=ms.float32)
    ms_output = mint_F.grid_sample(ms_input, ms_grid, mode='bilinear',
padding_mode='zeros', align_corners=False)
    print(f"MindSpore  输出: shape={ms_output.shape}")

    mindspore_np = mindspore_out.asnumpy() #  这里报错
```

报错信息为：

```
测试输入尺寸: 输入=(2, 1, 8, 8), 网格=(2, 6, 6, 2)
MindSpore 输出: shape=(2, 1, 6, 6)
Traceback (most recent call last):
  File "/home/ma-user/work/test_ms_grid_sample.py", line 911, in <module>
    test_bfloat16()
  File "/home/ma-user/work/test_ms_grid_sample.py", line 893, in test_bfloat16
    mindspore_np = mindspore_out.asnumpy()
                   ^^^^^^^^^^^^^^
NameError: name 'mindspore_out' is not defined. Did you mean: 'mindspore_np'?
[ERROR] PIPELINE(25170,ffffb0dc5440,python):2025-04-21-11:23:40.696.641 [mindspore/ccsrc/pipeline/jit/ps/pipeline.cc:2786] ClearResAtexit] Check exception before process exit: aclnnGridSampler2DGetWorkspaceSize call failed, please check
!

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- Ascend Error Message:
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EZ1001: [PID: 25170] 2025-04-21-11:23:40.691.833 input not implemented for DT_BFLOAT16, should be in dtype support list [DT_FLOAT,DT_FLOAT16,DT_DOUBLE,].[THREAD:25369]

(Please search "CANN Common Error Analysis" at https://www.mindspore.cn for error code description)

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- C++ Call Stack: (For framework developers)
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mindspore/ops/kernel/ascend/pyboost/auto_generate/pyboost_ascend_ops_2.cc:3349 operator()
```