LLM-Homework

wsl5300

June 2024

1 week6. learn basic pytorch

2 week7-1. LoRA

```
!pip install peft
from peft import LoraConfig, TaskType, get_peft_model, IA3Config
```

- Config-1.

```
peft_config = LoraConfig(
    lora_alpha=16,
    lora_dropout=0.1,
    r=64,
    bias="none",
    task_type="SEQ_CLS",
    target_modules=["q_lin", "k_lin", "v_lin", "out_lin"],
)
```

```
# train the model
trainer.train()
```

[80/80 01:06, Epoch 10/10]

Epoch	Training Loss	Validation Loss	Accuracy
1	No log	0.692889	0.437500
2	No log	0.690846	0.531250
3	No log	0.689358	0.656250
4	No log	0.688151	0.656250
5	No log	0.688213	0.656250
6	No log	0.687718	0.687500
7	No log	0.685953	0.625000
8	No log	0.685397	0.625000
9	No log	0.684702	0.687500
10	No log	0.684553	0.687500

```
TrainOutput(global_step=80, training_loss=0.6895392417907715, metrics={'train_runtime': 67.0484, 'train_samples_per_second': 19.091, 'train_steps_per_second':
1.193, 'total_flos': 29930055984768.0, 'train_loss': 0.6895392417907715, 'epoch': 10.0})
```

- Config-2.

```
peft_config_2 = LoraConfig(
    lora_alpha=32,
    lora_dropout=0.05,
    r=128,
    bias="none",
    task_type="SEQ_CLS",
    target_modules=["q_lin", "k_lin", "v_lin", "out_lin", "ffn.lin1", "ffn.l
)
```

```
# train the model
trainer.train()
```

[80/80 01:17, Epoch 10/10]

Epoch	Training Loss	Validation Loss	Accuracy
1	No log	0.705034	0.437500
2	No log	0.697528	0.437500
3	No log	0.693479	0.468750
4	No log	0.690541	0.531250
5	No log	0.689977	0.531250
6	No log	0.689119	0.531250
7	No log	0.686893	0.625000
8	No log	0.686136	0.687500
9	No log	0.685228	0.687500
10	No log	0.685006	0.687500

```
TrainOutput(global_step=80, training_loss=0.689031028747558, metrics={'train_runtime': 77.2288, 'train_samples_per_second': 16.574, 'train_steps_per_second':
1.036, 'total_flos': 35294415611520.0, 'train_loss': 0.689031028747558, 'epoch': 10.0})
```

- Config-3.

```
peft_config_3 = LoraConfig(
    lora_alpha=16,
    lora_dropout=0.1,
    r=64,
    bias="none",
    task_type="SEQ_CLS",
    target_modules=["q_lin", "v_lin", "ffn.lin1"],
)
```

```
# train the model
trainer.train()
```

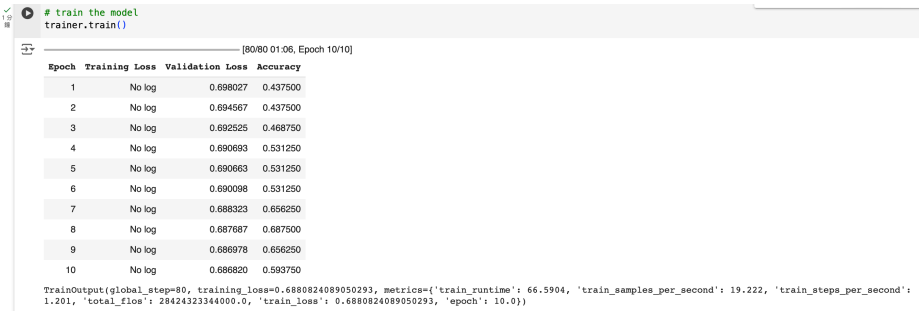
[80/80 00:56, Epoch 10/10]

Epoch	Training Loss	Validation Loss	Accuracy
1	No log	0.697003	0.437500
2	No log	0.693748	0.468750
3	No log	0.691832	0.468750
4	No log	0.690024	0.531250
5	No log	0.689886	0.531250
6	No log	0.689400	0.562500
7	No log	0.687558	0.656250
8	No log	0.686916	0.687500
9	No log	0.686163	0.687500
10	No log	0.685982	0.656250

```
TrainOutput(global_step=80, training_loss=0.6881428718566894, metrics={'train_runtime': 57.0207, 'train_samples_per_second': 22.448, 'train_steps_per_second':
1.403, 'total_flos': 30121640257152.0, 'train_loss': 0.6881428718566894, 'epoch': 10.0})
```

- Config_IA3.

```
peft_config_IA3 = IA3Config(
    task_type=TaskType.SEQ_CLS,
    target_modules=["q_lin", "v_lin", "k_lin", "out_lin", "ffn.lin1", "ffn.l
    feedforward_modules=["ffn.lin1", "ffn.lin2"],
)
```



```
# train the model
trainer.train()
```

[80/80 01:06, Epoch 10/10]

Epoch	Training Loss	Validation Loss	Accuracy
1	No log	0.698027	0.437500
2	No log	0.694567	0.437500
3	No log	0.692525	0.468750
4	No log	0.690693	0.531250
5	No log	0.690663	0.531250
6	No log	0.690098	0.531250
7	No log	0.688323	0.656250
8	No log	0.687687	0.687500
9	No log	0.686978	0.656250
10	No log	0.686820	0.593750

```
TrainOutput(global_step=80, training_loss=0.6880824089050293, metrics={'train_runtime': 66.5904, 'train_samples_per_second': 19.222, 'train_steps_per_second':
1.201, 'total_flos': 28424323344000.0, 'train_loss': 0.6880824089050293, 'epoch': 10.0})
```

3 week7-2. LaTeX

詳情請見檔案 mvc_week7.pdf。