

ADL hw3

b10902044

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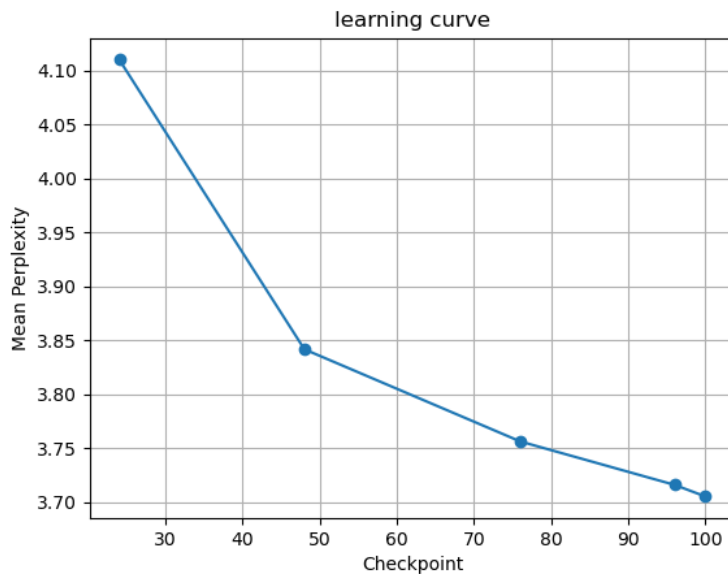
Q1: LLM Tuning

Describe:

1. How much training data did you use? 4000 examples
2. How did you tune your model?
use qlora.yml in OpenAccess-AI-Collective/axolotl and yentinglin/Taiwan-LLM-7B-v2.0-chat as PLM
3. What hyper-parameters did you use?
val_set_size: 0.6
gradient_accumulation_steps: 1
micro_batch_size: 1
num_epochs: 1
learning_rate: 0.0004

performance:

1. What is the final performance of your model on the public testing set?
Mean perplexity: 3.501983426094055
2. Plot the learning curve on the public testing set



Q2: LLM Inference Strategies

Zero-Shot

1. What is your setting?

prompt = "你是人工智慧助理，以下是用戶和人工智慧助理之間的對話。你要對用戶的問題提供有用、安全、詳細和禮貌的回答。USER: instruction ASSISTANT:"

2. How did you design your prompt?

i use the original prompt from utils.py

Few-Shot (In-context Learning)

1. What is your setting?

prompt = "你是人工智慧助理，以下是用戶和人工智慧助理之間的對話。你要對用戶的問題提供有用、安全、詳細和禮貌的回答。範例一: 翻譯成現代文:\n唐子謂尊師曰：本入山為求長生，今反為虎狼之餐。\n回答: 唐臣對薛尊師說：本來入山是為瞭尋求長生不死的，現在反倒成為虎狼之食瞭\n範例二: 父母很害怕，請薛二娘來治療。\n把這句話翻譯成文言文:\n回答: 父母患之，迎薛巫以辨之。USER: instruction ASSISTANT:"

2. How did you design your prompt?

i use the zero-shot prompt and add first two examples from train.json

3. How many in-context examples are utilized?

two examples

4. How you select them?

select first two examples from train.json

Comparison:

What's the difference between the results of zero-shot, few-shot, and LoRA?

use Mean perplexity to compare

1. zero-shot: 5.450592497348786
2. few-shot(2 examples): 4.869869946956634
3. lora: 3.6661360869407655

few-shot have slightly better performance than zero-shot due to the improvement of the prompt, however using lora to train the model can have more significant improvement to the performance instead of only modifying the prompt.

Q3: Bonus: Other methods

Experiments with different PLMs

i use Trelis/Llama-2-7b-chat-hf-function-calling-v2 as pre trained model and same hyper-parameter in Q1, getting the model with Mean perplexity = 3.8348864149402437, slightly worse than my final model.