Q1: LLM Tuning

(a) Describe

- Train data size: 1000

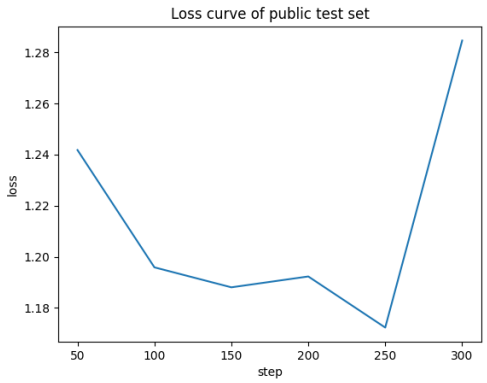
Hyperparameter	
Gradient Accumulation Steps	2
Batch Size	2
Learning Rate	2e-4
Steps	250
Lora R	8
Lora Alpha	2
Lora Dropout	0.1
Optimizer	8-bit Adam
Linear Scheduler	constant

- Fine Tune

  Our Pretrain LM model is Taiwan Llama. Since we can't directly fine tune on Taiwan Llama, we would fine tune on the 4-bit quantization LoRA. LoRA model is 8-layer deep with alpha = 2. First, we load the data and add the prompt to the original instruction, concatenate the input with the output. Then we tokenize the sentence to id and add special tokens at the start and final of the sentence. After processing, we feed them into model and train it.

(b) Performance

The perplexity on public test set of the final model is 3.8822



Since the loss has increase rapidly after 250 steps, we take 250 step as final model.

Q2. LLM Inference Strategies

(a) Zero Shot

We do not add the prompt to instruction and used original as input. The perplexity of the zero shot method is 7.13640

(b) Few Shot

We add “以下為範例題目:翻譯成文言文：\n 雅裏惱怒地說： 從前在福山田獵時，你誣陷獵官，現在又說這種話。範例答案：雅裏怒曰： 昔畋於福山，卿誣獵官，今復有此言。” before instruction as input. The perplexity of few shot method is 5.95136. We using one examples as input because it has the most difference in perplexity

(c) Comparison

The zero shot has highest perplexity, the few shot is in middle and LoRA has the lowest perplexity.