CSC401 Homework Assignment #2
Analysis

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1   Training Results

1.1   Training Loop Printout

Model with Pre-layer Normalization

```
[Device:cuda] Epoch 1 Training ====
Epoch: 100% 2171/2171 [01:56<00:00, 18.69it/s]
[Device:cuda] Epoch 1 Validation ====
Epoch 1: loss=6.246624596598839, BLEU-4: 15.9045 BLEU-3: 18.9850, time=00:02:32
[Device:cuda] Epoch 2 Training ====
Epoch: 100% 2171/2171 [01:58<00:00, 18.30it/s]
[Device:cuda] Epoch 2 Validation ====
Epoch 2: loss=2.6125431804819517, BLEU-4: 32.3820 BLEU-3: 38.9379, time=00:05:00
[Device:cuda] Epoch 3 Training ====
Epoch: 100% 2171/2171 [01:58<00:00, 18.29it/s]
[Device:cuda] Epoch 3 Validation ====
Epoch 3: loss=1.8071209433330253, BLEU-4: 34.4108 BLEU-3: 41.2555, time=00:07:29
[Device:cuda] Epoch 4 Training ====
Epoch: 100% 2171/2171 [01:58<00:00, 18.27it/s]
[Device:cuda] Epoch 4 Validation ====
Epoch 4: loss=1.4453762439141786, BLEU-4: 35.5304 BLEU-3: 42.1599, time=00:09:56
[Device:cuda] Epoch 5 Training ====
Epoch: 100% 2171/2171 [01:58<00:00, 18.40it/s]
[Device:cuda] Epoch 5 Validation ====
Epoch 5: loss=1.1869039849332268, BLEU-4: 36.1735 BLEU-3: 42.8110, time=00:12:23
[Device:cuda] Epoch 6 Training ====
Epoch: 100% 2171/2171 [01:58<00:00, 18.36it/s]
[Device:cuda] Epoch 6 Validation ====
Epoch 6: loss=0.9999292358611928, BLEU-4: 36.3233 BLEU-3: 42.9580, time=00:14:53
[Device:cuda] Epoch 7 Training ====
Epoch: 100% 2171/2171 [01:58<00:00, 18.38it/s]
[Device:cuda] Epoch 7 Validation ====
Epoch 7: loss=0.8557376364638102, BLEU-4: 36.7024 BLEU-3: 43.2409, time=00:17:22
Finished 7 epochs
```

1.2   Test Set BLEU Score

Model	BLEU-4	BLEU-3
Model Pre-layer Normalization	41.9362	48.9238

Table 1: The BLEU score reported on the test set for the pre-layer model.

2   Translation Analysis

2.1   Translations

1. Voila des mesures qui favorisent la famille canadienne.

1

    (a) **My Model:** these measures promote canadian family

    (b) **Bart:** These are measures that favour the Canadian family.

    (c) **Google Translate:** These are measures that favor the Canadian family.

2. Je voudrais aussi signaler aux deputes qu'ils peuvent maintenant s'avancer pour voter.

    (a) **My Model:** i would also like to point out that they can move to vote

    (b) **Bart:** I also want to tell members that they can now vote.

    (c) **Google Translate:** I would also like to point out to members that they can now come forward to vote.

3. Trudeau embauche un cabinet de consultants pour examiner la dependance excessive du gouvernement a l'egard des cabinets de consultants.

    (a) **My Model:** trudeau s office to review consultants look at the government s excessive dependency

    (b) **Bart:** Trudeau is creating a consulting cabinet to look at the excessive dependence of the government on

    (c) **Google Translate:** Trudeau hires consulting firm to examine government's overreliance on consulting firms.

4. Pierre demande s'il vous plait s'il peut s'attribuer le merite d'avoir supprime 600 emplois a la SRC.

    (a) **My Model:** pierre s please take the credit

    (b) **Bart:** Pierre asks if you would support the merit of removing 600 jobs from the RCMP.

    (c) **Google Translate:** Pierre please asks if he can take credit for cutting 600 jobs at the SRC.

5. La France a remporte la coupe du monde 2018.

    (a) **My Model:** france has won the world s cuts

    (b) **Bart:** France won the world in 2018.

    (c) **Google Translate:** France won the 2018 World Cup.

6. J'avais a peine de l'eau a boire pour huit jours.

    (a) **My Model:** i barely had a drink for eight days

    (b) **Bart:** I had enough water for eight days.

    (c) **Google Translate:** I barely had water to drink for eight days.

7. Toronto est une ville du Canada.

    (a) **My Model:** toronto is a city of canada

    (b) **Bart:** Toronto is a city of Canada.

    (c) **Google Translate:** Toronto is a city in Canada.

8. Les etudiants de l'Universite de Toronto sont excellents.

    (a) **My Model:** the university of toronto is excellent

    (b) **Bart:** The students at the University of Toronto are excellent.

    (c) **Google Translate:** The students at the University of Toronto are excellent.

2.2 Discussion

In this section, write a brief discussion on your findings. Describe the quality of those sentences. How's your model compared with Google Translate or ChatGPT?