Information Retrieval

Assignment 4 : Report

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Experiments and Results

The model training and evaluation were carried out under four different experimental setups:

1. Base Configuration:
   - Batch Size: 8
   - Epochs: 3
   - Learning Rate: 5e-5
2. Changed Batch Size:
   - Batch Size: 4
3. Increased Number of Epochs:
   - Epochs: 6
4. Increased Learning Rate:
   - Learning Rate: 2e-4

In each setup, the model was evaluated on the ROUGE metrics, which include ROUGE-1, ROUGE-2, ROUGE-L, and ROUGE-Lsum.

Results

- Base Configuration:
  - ROUGE-1: P=0.09, R=0.10, F1=0.09
  - ROUGE-2: P=0.02, R=0.02, F1=0.02
  - ROUGE-L: P=0.08, R=0.10, F1=0.08
  - ROUGE-Lsum: P=0.08, R=0.10, F1=0.08
- Changed Batch Size (to 4):
  - Improvement in recall for ROUGE-1, ROUGE-L, and ROUGE-Lsum, while precision and F1-score remain largely unchanged.
- Increased Number of Epochs (to 6):
  - No significant changes observed in metrics, indicating limited impact of increased epochs under the same learning conditions.
- Increased Learning Rate (to 2e-4):

- Similar to the change in batch size, this adjustment shows slight improvements in recall for ROUGE-1, ROUGE-L, and ROUGE-Lsum but not in other metrics.

The adjustments in batch size and learning rate have shown some improvements in the recall rates for certain ROUGE metrics; however, overall changes in model performance were modest. Increasing the number of training epochs did not yield significant improvements, suggesting that either further increases in epochs or adjustments in other parameters (like learning rate or batch size) might be required to see marked improvements. The experiments demonstrate that fine-tuning specific training parameters can influence certain aspects of model performance, notably recall in this context.

Example of a generated summary

Review Input :

jared castle mentioned in his review andrew knowlton restaurant editor at bon apptit magazine predicts sriracha will be one of the biggest food trends of i must state that mr knowlton doesnt know what hes talking about and that this chilehead banging out this review was aware of and used sriracha since at least and it isnt like its a big breakthrough guy fieri of food network fame has been to plenty of diners driveins and dives where sriracha is used not just as a condiment but as a prime ingredientwhat is not to love about this sauce it is nice and thick has a coarse chili and garlic texture and packs a perfect asian taste of chili heat and pungent garlic it is a perfectly balanced sauce which isnt too hot or too weak it presents a nice punch yet isnt overpoweringits such a great sauce that shady people have tried to imitate sriracha and failed horrendously theres one counterfeit that had a yellow lid on his while the bottle tried to mimic the genuine article the flavor of that counterfeit was sickeningly sweet and had little chile and garlic flavor horrible for those looking for the real sriracha the following is copied directly from huy fongs website circa cutherethe counterfeit products are identical to our products in all regards including the logo and wording on the label

except for the following distinguishable characteristics that taste is not identical to our product below the green cap of our bottles there is a protruding plastic ring which is the same diameter of the green cap the counterfeit products ring is much smaller our products batch code consists of two lines printed with a laser etcher which produces a clear colorless imprint the first line states the productbatch code must start with an h and the second line states the expiration date the counterfeit does not have a productbatch code but has an expiration date that may be either be printed in black ink or or hotstamped resulting in a colorless blurry imprint finally our bottle has huy fong usa embossed on the bottom of our bottle the counterfeit does notcuthereaccept neither substitutes nor imitators huy fongs sriracha sauce is the real deal and ounce by ounce is quite inexpensive event sprawlmart carries it though id rather go down to the strip district in pittsburgh and pick up a bunch of oz bottles cheapits not just awesome sauce its sublime sauce this is something that should be mandatory in any refrigerators condiment rack

Reference Summary :

the chileheads perfectlybalanced ketchup

Generated Summary :

great sriracha sauce

In the provided review input, the reviewer discusses their long-term experience with Sriracha, counters a prediction about its trendiness, and criticizes counterfeit products. If the dataset summary focused primarily on other elements (e.g., Sriracha's culinary uses or broader market trends) rather than the specific points about personal experience, counterfeit issues, and detailed product description, then a ROUGE-based evaluation would show poor alignment despite the generated summary being comprehensive and informative.

ROUGE relies on exact matches of word sequences. If the summarization paraphrases

the content with different vocabulary or structures sentences differently than the reference summary, the score can be low, even though the semantics are the same.

Google Drive Link for the models

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