Clickbait Spoiling with Language Models

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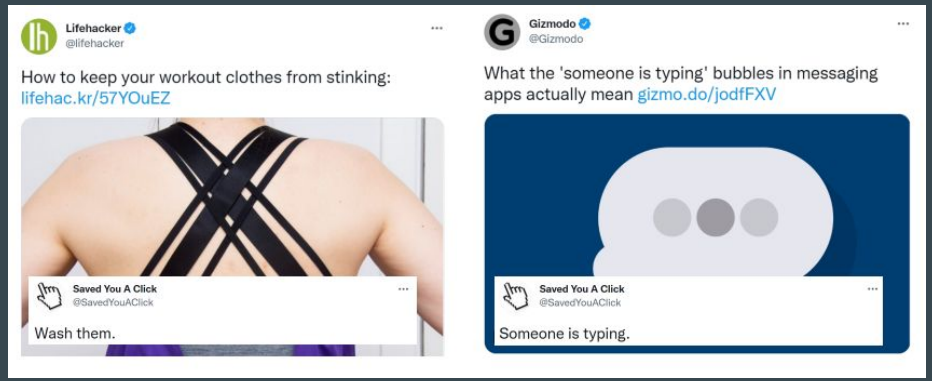
Clickbait Challenge at SemEval 2023 - Clickbait Spoiling

Task 1 on Spoiler Type Classification:

The task is classifying the spoiler type that clickbait post warrants (“phrase” “passage”, “multi”).

Task 2 on Spoiler Generation:

The task is generating the spoiler for the clickbait posts.



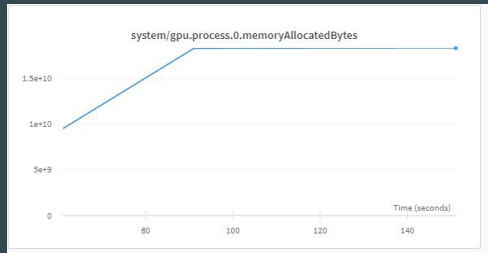
Data

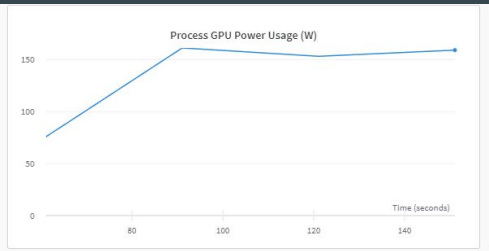
- uuid: The uuid of the dataset entry.
- postText: The text of the clickbait post which is to be spoiled.
- targetParagraphs: The main content of the linked web page.
- targetTitle: The title of the linked web page.
- targetUrl: The URL of the linked web page.
- humanSpoiler: The human generated spoiler for the clickbait.
- spoiler: The human extracted spoiler.
- spoilerPositions: The position of the human extracted spoiler.
- tags: The spoiler type (might be "phrase", "passage", or "multi").
- Transformed data to comply with HuggingFace

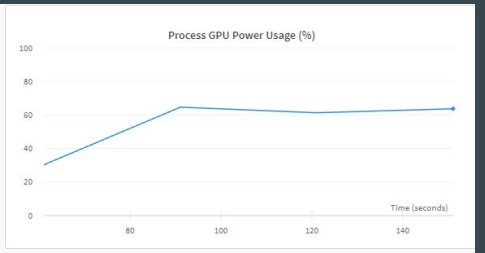
W&B Webinars

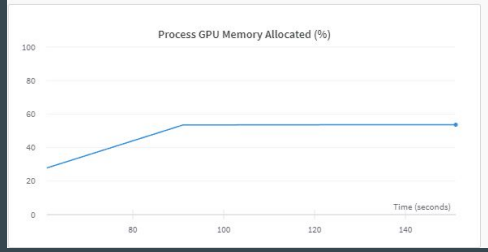
Name (8 visualized)

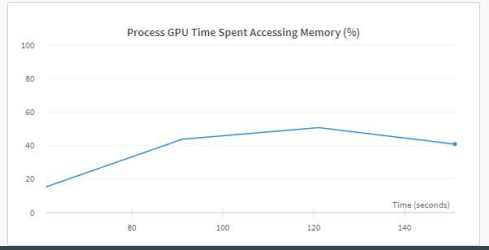
- stoic-surf-8
- divine-water-7
- dauntless-feather-6
- glamorous-meadow-5
- jumping-cosmos-4
- worthy-vortex-3
- lemon-sea-2
- skilled-galaxy-1

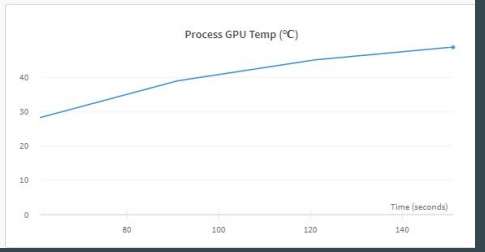


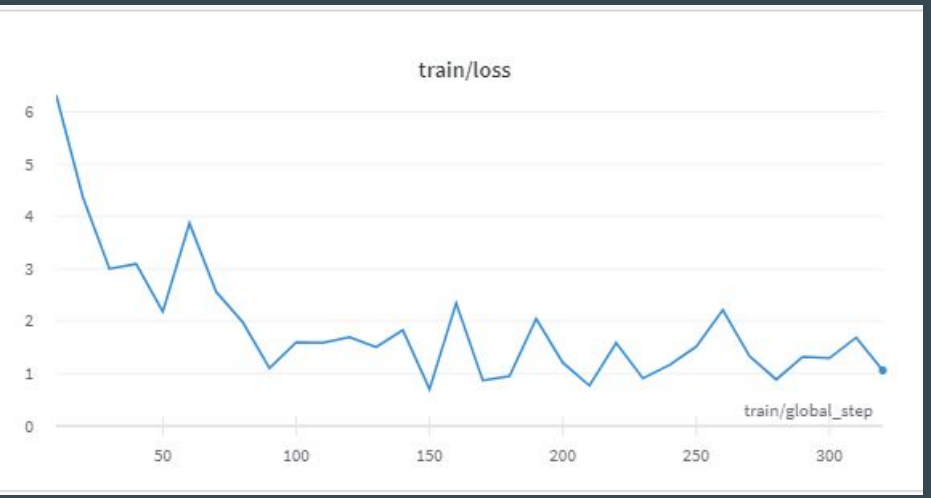


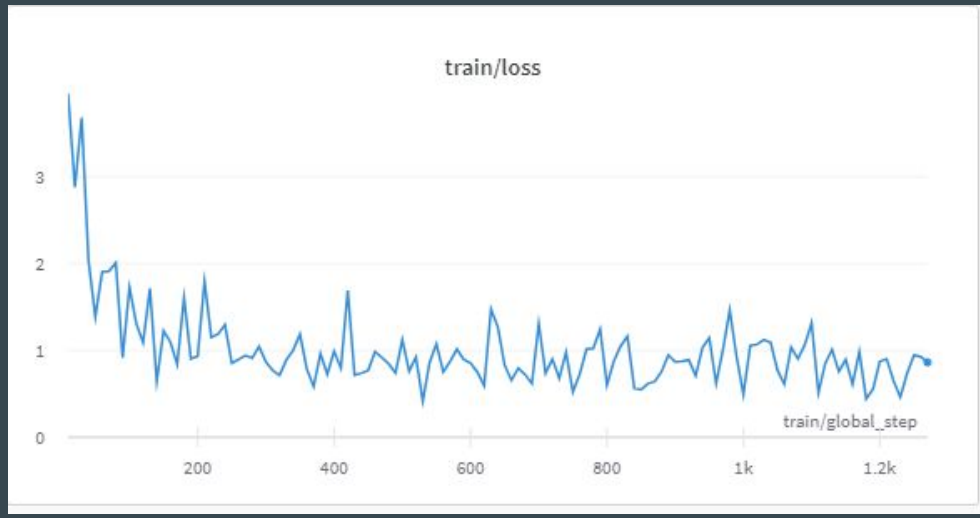


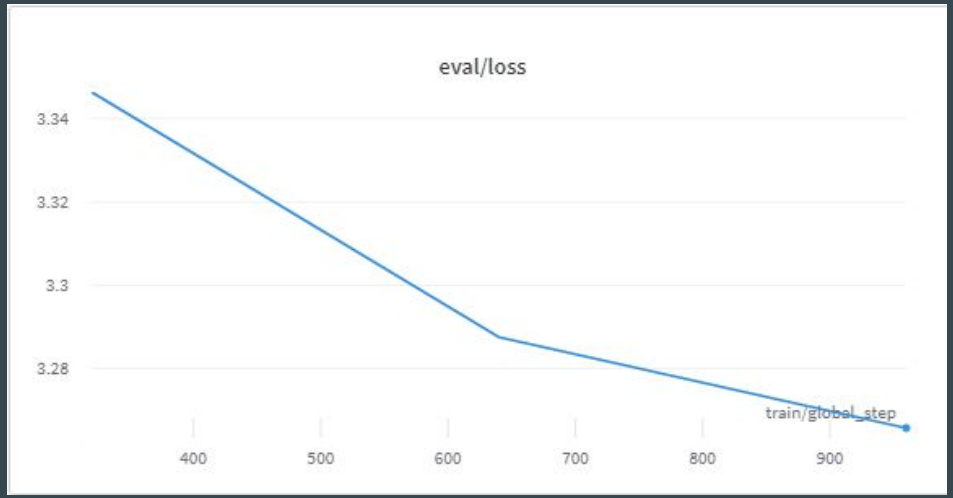







train/loss
6
5
4
3
2
1
0
50
100
150
200
250
300
train/global_step


train/loss
3
2
1
0
200
400
600
800
1k
1.2k
train/global_step


eval/loss
3.34
3.32
3.3
3.28
400
500
600
700
800
900
train/global_step

Approaches

- TF-IDF (Baseline)
- Prompt Engineering (GPT3.5) (Baseline)
- RoBERTa
- LLaMA 7b (LoRA)
- Falcon 7b (QLoRA)
- T5 Large

TF-IDF

$$w_{x,y} = tf_{x,y} \times \log\left(\frac{N}{df_x}\right)$$

TF-IDF
Term x within document y

$tf_{x,y}$ = frequency of x in y
df_x = number of documents containing x
N = total number of documents

- Methodology:

  Score each sentence with tf-idf, pick the sentence with highest score

TF-IDF	Spoiler
No? Well maybe now we've sparked your curiosity.??? They don't fart—detectably. That is less clear. But how much air does a swallow swallow when a swallow swallows air	They don't fart
t has sold 5.98 million copies so far.	fastest video to break 1 billion views

GPT 3.5 Turbo OpenAI

We tried 2 shot for a baseline

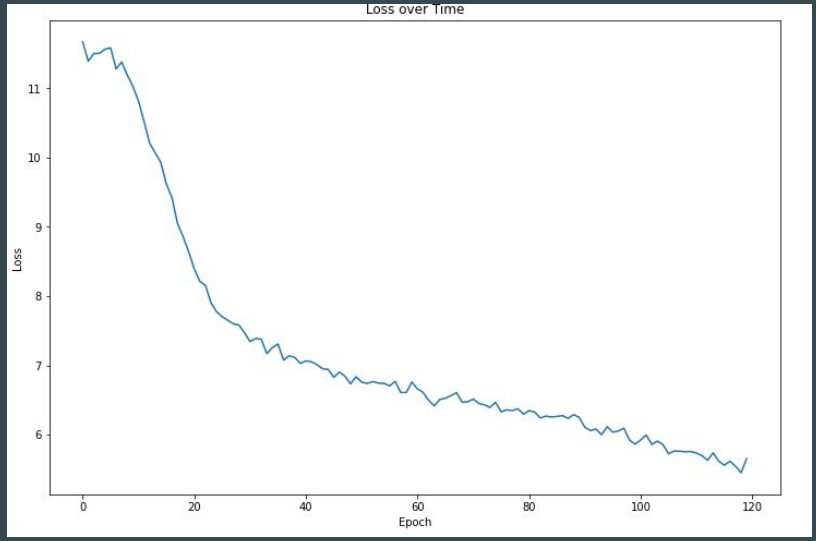
GPT Prediction	Spoiler
man swallowed and pooped out a microSD card in order to recover drone footage.	a man who swallowed a 64GB microSD card and then pooped it into a strainer
Smoky Paprika-Baked Garbanzo Beans Recipe	Smoky Paprika-Baked Garbanzo Beans
bricking iPad Pros	iOS 9.3.2 is bricking iPad Pros

RoBERTa

Variant of BERT

Fine-tuned 10 epochs

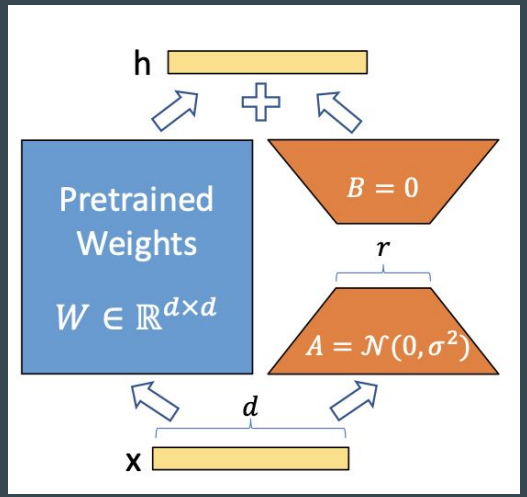
Sequence to Sequence Training



RoBERTa	Spoiler
KKtsss the a	$25K
T Trump Trump Trump	Hillary Clinton

LoRA

The Low-Rank Adaptation (LoRA) method works by injecting trainable rank decomposition matrices into each layer of the Transformer architecture of a pre-trained language model. This approach significantly reduces the number of trainable parameters for downstream tasks.



The reparameterization of the pretrained weights.

LoRA

Advantages:

- Flexible
- Different LoRA modules for different tasks.
- Less resource usage

Quantization (4b)

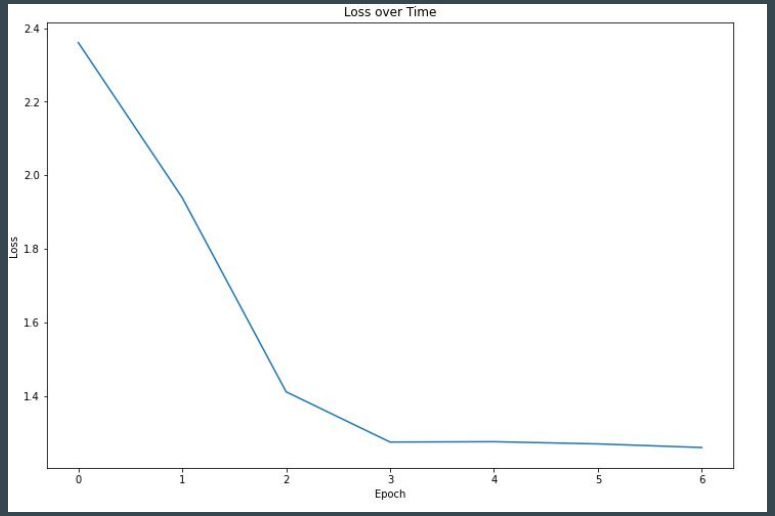
- QLoRA: Efficient Finetuning of Quantized LLMs
- Utilized in Falcon 7b trained on A100

LLaMA 7b

Used LoRA

Fine-tuned 3 epochs

Used a prompt template



LLaMA	**Spoiler**
This popular soda could cure your hangovers	Sprite
Rebekah Brooks is back with Rupert Murdoch, and this time it's digital	Brooks would eventually return to a role at News Corp, few expected her to land at Storyful

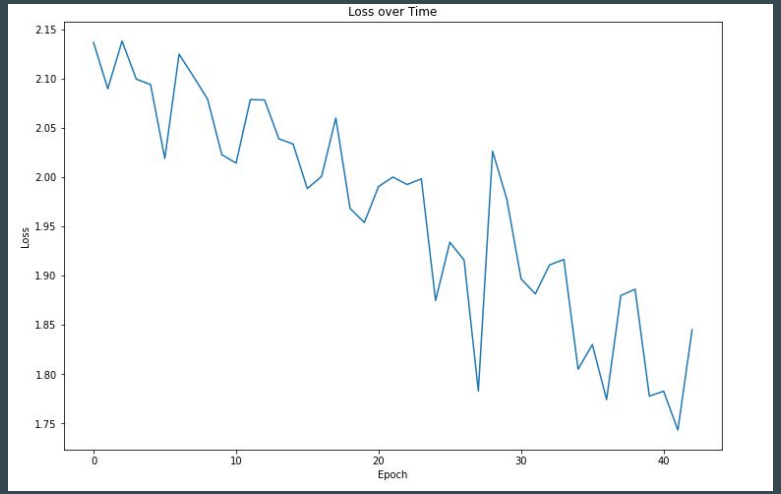
Falcon 7b

Quantized into 4 bits

Used QLoRA

Fine-tuned 10 epochs

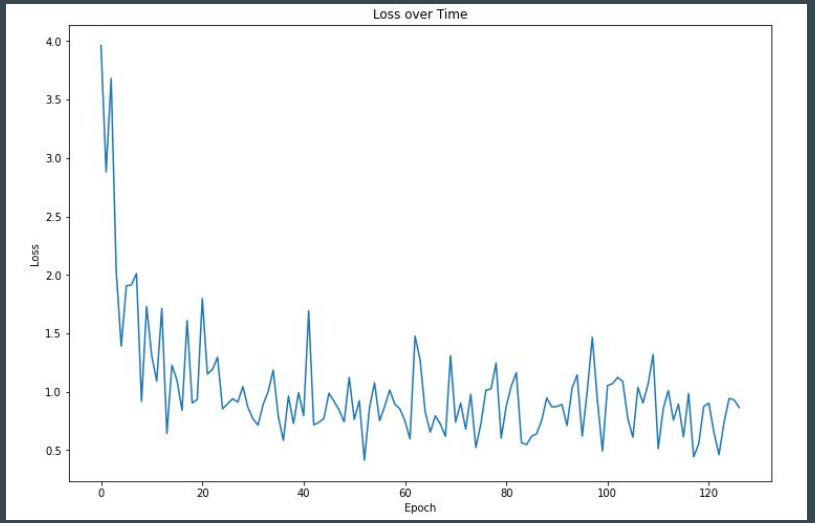
Used a prompt template



Falcon	Spoiler
We expect online (primarily Amazon) will continue to take share from department stores	Amazon
If they attack Israel or the Jews, I don't think that would be a good thing, because the Jews, as they say	Israel

T5 Large

- Seq2SeqTrainer
- Fine-tuned 10 epochs
- Sequence to Sequence Training



T5	**Spoiler**
CBGB	Alan Rickman & Rupert Grint CBGB
%20	%20
Sprite	Sprite

Evaluation Metrics

- BLEU
- Bert Score

"translate English to German: That is good."

"cola sentence: The course is jumping well."

"stsb sentence1: The rhino grazed on the grass. sentence2: A rhino is grazing in a field."

"summarize: state authorities dispatched emergency crews tuesday to survey the damage after an onslaught of severe weather in mississippi…"

T5

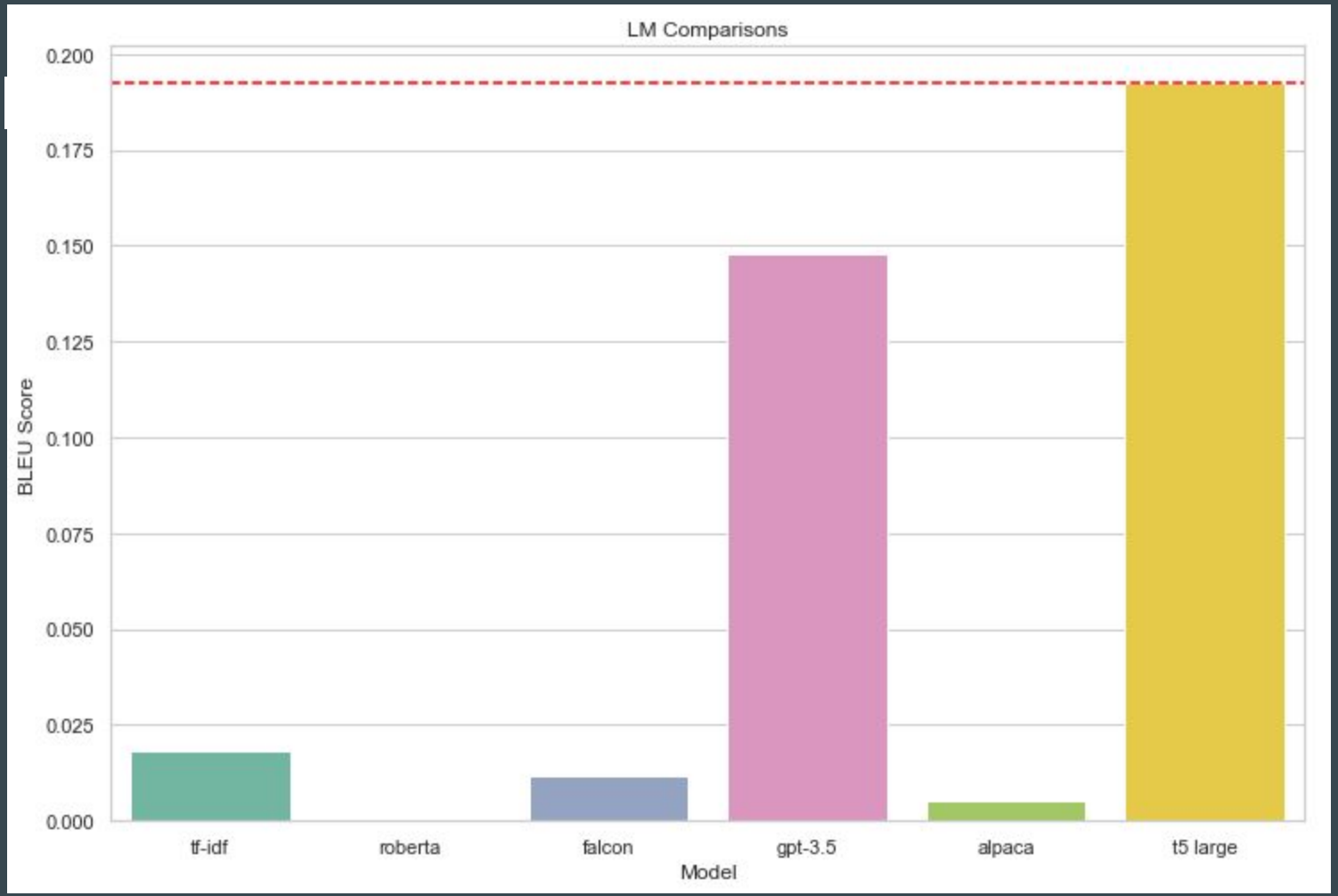
"Das ist gut."

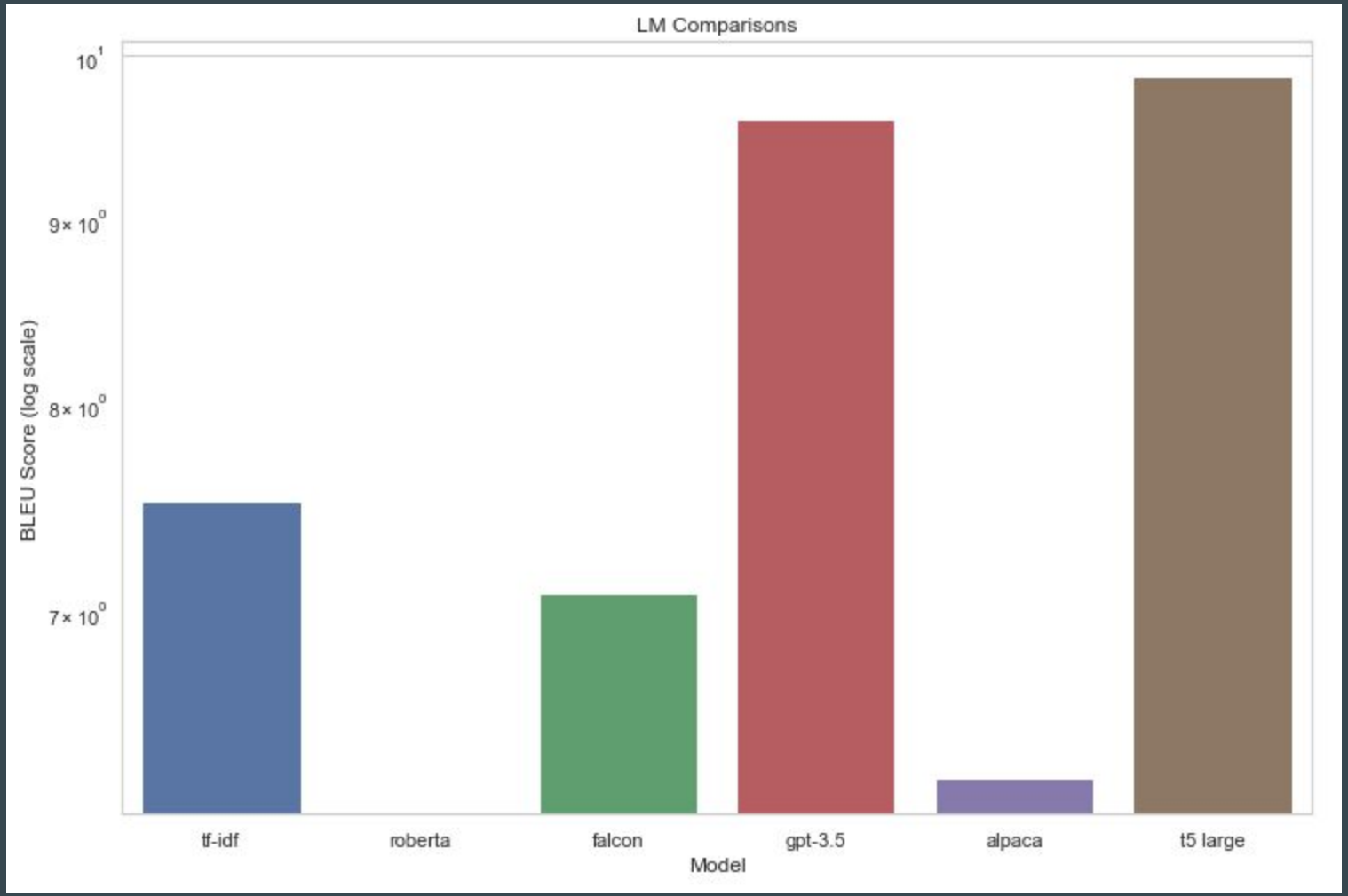
"not acceptable"

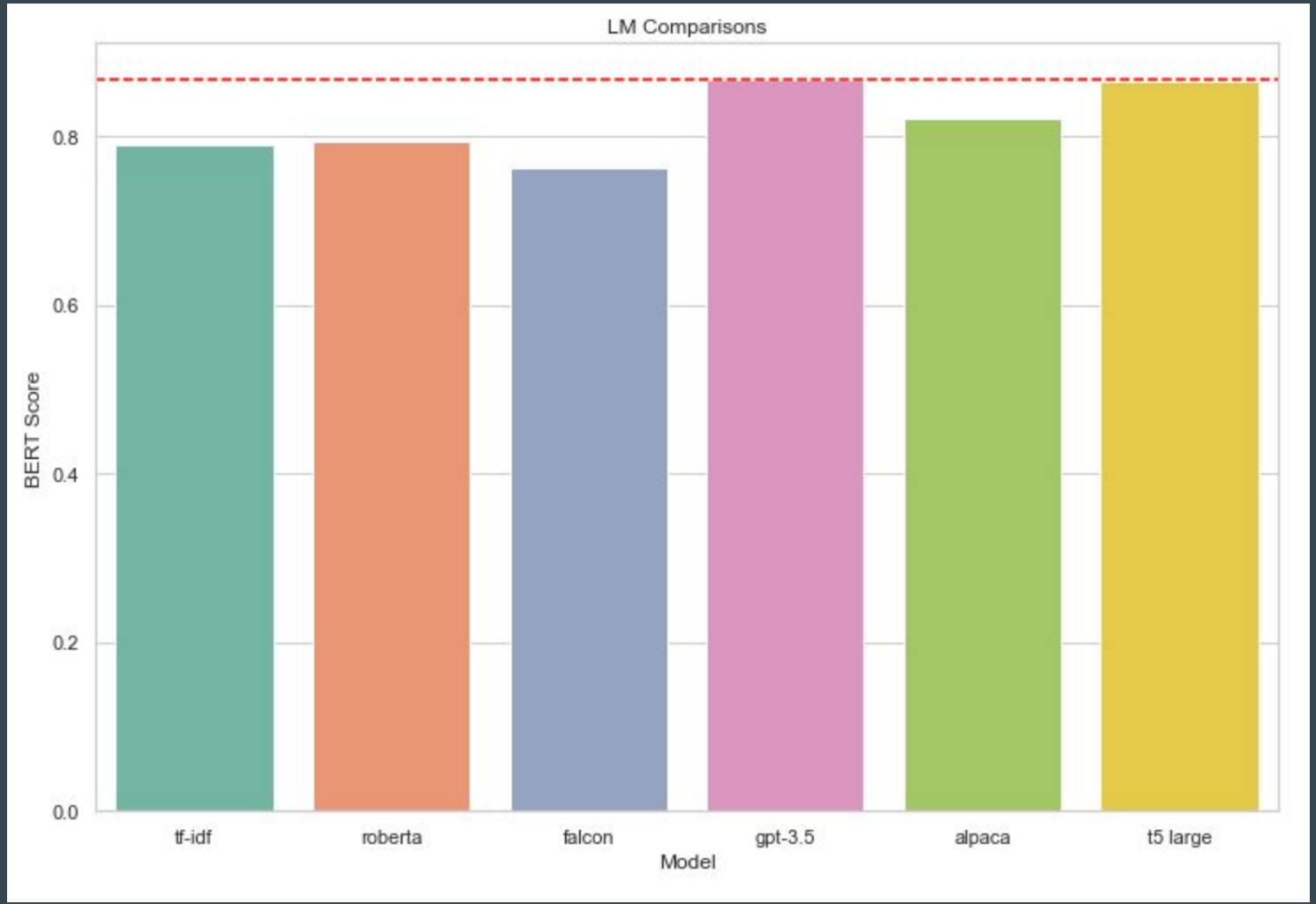
"3.8"

"six people hospitalized after a storm in attala county."

Resul


LM Comparisons
BLEU Score
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
tf-idf
roberta
falcon
gpt-3.5
alpaca
t5 large
Model


LM Comparisons
BLEU Score (log scale)
10^{1}
9×10^{0}
8×10^{0}
7×10^{0}
tf-idf
roberta
falcon
gpt-3.5
alpaca
t5 large
Model


LM Comparisons
BERT Score
0.0
0.2
0.4
0.6
0.8
tf-idf
roberta
falcon
gpt-3.5
alpaca
t5 large
Model