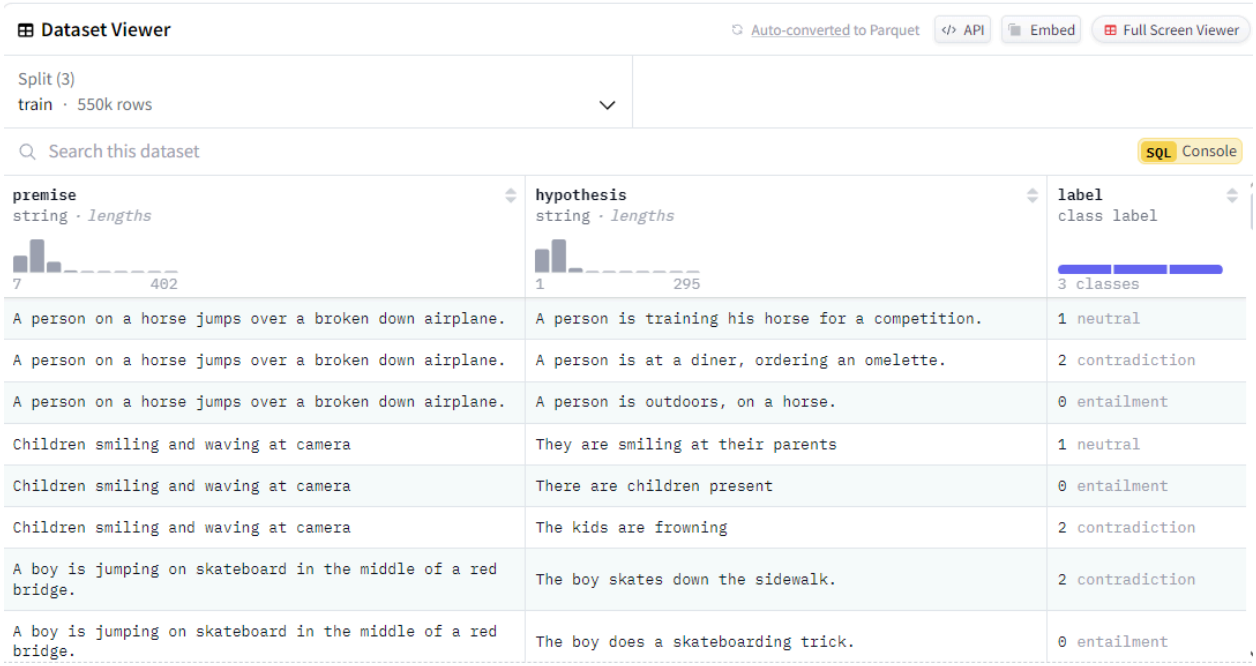
Data used:



Dataset Viewer

Auto-converted to Parquet | API | Embed | Full Screen Viewer

Split (3)
train · 550k rows

Search this dataset

SQL Console

premise string · *lengths* 7 – 402	hypothesis string · *lengths* 1 – 295	label class label 3 classes
A person on a horse jumps over a broken down airplane.	A person is training his horse for a competition.	1 neutral
A person on a horse jumps over a broken down airplane.	A person is at a diner, ordering an omelette.	2 contradiction
A person on a horse jumps over a broken down airplane.	A person is outdoors, on a horse.	0 entailment
Children smiling and waving at camera	They are smiling at their parents	1 neutral
Children smiling and waving at camera	There are children present	0 entailment
Children smiling and waving at camera	The kids are frowning	2 contradiction
A boy is jumping on skateboard in the middle of a red bridge.	The boy skates down the sidewalk.	2 contradiction
A boy is jumping on skateboard in the middle of a red bridge.	The boy does a skateboarding trick.	0 entailment

Data Sampling:

```
550152
Training Data: 1001 samples
Testing Data: 100 samples
Validation Data: 100 samples
```

Model and QLora Configuration used:

```python
MODEL_NAME = "microsoft/phi-2"

# Define 4-bit quantization configuration
bnb_config = BitsAndBytesConfig(
    load_in_4bit=True,
    bnb_4bit_use_double_quant=True,
    bnb_4bit_quant_type="nf4",
    bnb_4bit_compute_dtype=torch.bfloat16
)

# Load the pretrained model with 4-bit quantization
pretrained_model = AutoModelForCausalLM.from_pretrained(
    MODEL_NAME,
    device_map="auto",
    trust_remote_code=True,
    quantization_config=bnb_config
)

# LoRA configuration for QLoRA
lora_config = LoraConfig(
    r=8,
    lora_alpha=32,
    target_modules=["q_proj", "v_proj"],
    lora_dropout=0.1,
    bias="none"
)
model = get_peft_model(pretrained_model, lora_config)
```

Prompt used to extract information from mode:

```python
    # Concatenate premise and hypothesis with a more specific prompt
    input_text = (
        f"Premise: {premise}\n"
        f"Hypothesis: {hypothesis}\n"
        f"Answer with one of the following: entailment, neutral, contradiction.\nAnswer:"
    )
```

Use of regex library to extract information from output:

```python
    # Use regex to extract the label directly after "Answer:"
    match = re.search(r"Answer:\s*(entailment|neutral|contradiction)", prediction, re.IGNORECASE)
```

Initial calculated accuracy:

```
Model Accuracy: 52.00%
Example 1: contradiction
Example 2: entailment
Example 3: entailment
Example 4: entailment
Example 5: entailment
```

Trainable parameters: 4362240
|| Total parameters: 1525754880
|| Percent trainable: 0.29%

```
output_dir = "./shii_finetune_phi2"
training_args = TrainingArguments(
    output_dir=output_dir,
    num_train_epochs=1,
    per_device_train_batch_size=4,
    gradient_accumulation_steps=4,
    warmup_steps=5,
    learning_rate=2.5e-5,
    logging_steps=50,
    save_steps=len(train_dataset) // 2,
    eval_steps=50,
    evaluation_strategy="epoch",
    save_strategy="epoch",
    fp16=True,
    optim="paged_adamw_8bit",
    report_to='none'
)
```

Training argos used

Final accuracy:

```
Model Accuracy: 54.00%
Example 1: contradiction
Example 2: entailment
Example 3: entailment
Example 4: entailment
Example 5: entailment
```

%age improvement=2%

Examples where accuracy improvement

```
Sample 1:
Premise: This church choir sings to the masses as they sing joyous songs from the book at a church.
Hypothesis: The church has cracks in the ceiling.
Generated Label (Pre-trained): Premise: This church choir sings to the masses as they sing joyous songs from the book at a church.
Hypothesis: The church has cracks in the ceiling.
Answer with one of the following: entailment, neutral, contradiction.
Answer: Contradiction

Exercise 2:
Premise: This church choir sings to the masses as they sing joyous songs from the book at a church.
Hypothesis: The church choir is made up of only men.
Answer
Sample 2:
Premise: A woman within an orchestra is playing a violin.
Hypothesis: A woman is playing the violin.
Generated Label (Pre-trained): Premise: A woman within an orchestra is playing a violin.
Hypothesis: A woman is playing the violin.
Answer with one of the following: entailment, neutral, contradiction.
Answer: entailment

Exercise 2:
Premise: A man is playing the trumpet.
Hypothesis: A man is playing the trumpet.
Answer with one of the following: entailment, neutral, contradiction.
Answer: entail
Sample 3:
Premise: Two men climbing on a wooden scaffold.
Hypothesis: Two sad men climbing on a wooden scaffold.
Generated Label (Pre-trained): Premise: Two men climbing on a wooden scaffold.
Hypothesis: Two sad men climbing on a wooden scaffold.
Answer with one of the following: entailment, neutral, contradiction.
Answer: entailment

Exercise 2:
Premise: A man is holding a gun.
Hypothesis: The man is about to shoot someone.
Answer with one of the following: entailment, neutral, contradiction.
Answer:
```

Cases where it remained same

```
Example failure cases corrected by fine-tuned model:
Sample 1:
Premise: This church choir sings to the masses as they sing joyous songs from the book at a church.
Hypothesis: The church has cracks in the ceiling.
Generated Label (Fine-tuned): Premise: This church choir sings to the masses as they sing joyous songs from the book at a
Hypothesis: The church has cracks in the ceiling.
Answer with one of the following: entailment, neutral, contradiction.
Answer: Contradiction

Exercise 2:
Premise: This church choir sings to the masses as they sing joyous songs from the book at a church.
Hypothesis: The church choir is made up of only men.
Answer
Sample 2:
Premise: A woman within an orchestra is playing a violin.
Hypothesis: A woman is playing the violin.
Generated Label (Fine-tuned): Premise: A woman within an orchestra is playing a violin.
Hypothesis: A woman is playing the violin.
Answer with one of the following: entailment, neutral, contradiction.
Answer: entailment

Exercise 2:
Premise: A man is playing the trumpet.
Hypothesis: A man is playing the trumpet.
Answer with one of the following: entailment, neutral, contradiction.
Answer: entail
Sample 3:
Premise: Two men climbing on a wooden scaffold.
Hypothesis: Two sad men climbing on a wooden scaffold.
Generated Label (Fine-tuned): Premise: Two men climbing on a wooden scaffold.
Hypothesis: Two sad men climbing on a wooden scaffold.
Answer with one of the following: entailment, neutral, contradiction.
Answer: entailment

Exercise 2:
Premise: A man is holding a gun.
Hypothesis: The man is about to shoot someone.
Answer with one of the following: entailment, neutral, contradiction.
Answer:
```

Training time per epoch is 47.64 minutes
CPU Memory Used: 11.73 GB
GPU Memory Used: 5.20 GB
Initial Model Accuracy: 52.00%
Fine-tuned Model Accuracy: 54.00%