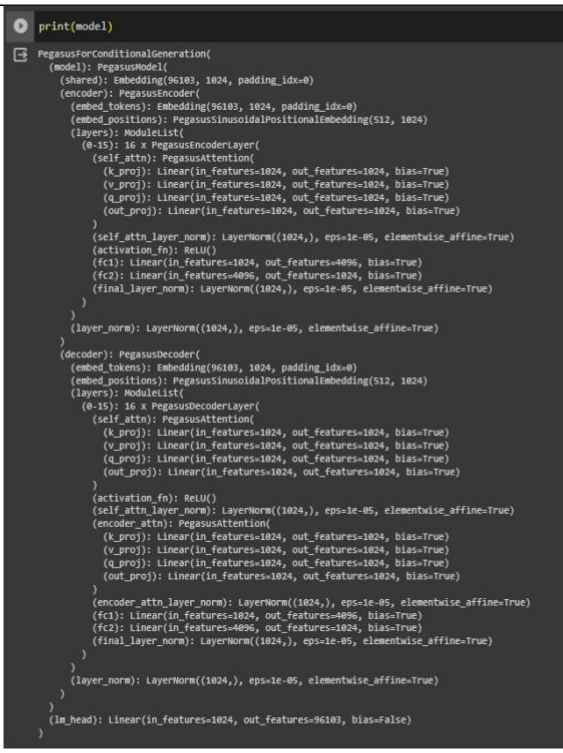
Project Development Phase
Model Performance Test

Date	20 November 2023
Team ID	SPSGP-614965
Project Name	Project - Extracting Intelligent Insights With Al Based Systems
Maximum Marks	10 Marks

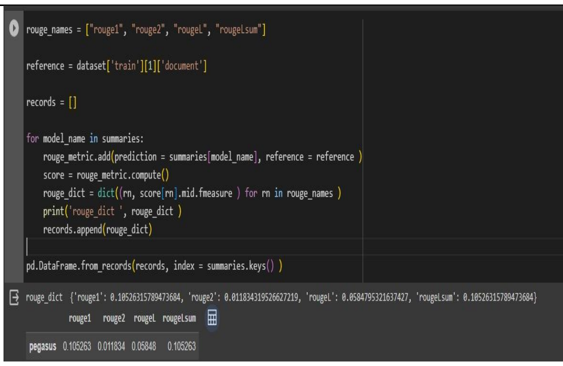
Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	**Total params: 5,69,748,480** **Trainable params: 5,69,748,480** **Non-trainable params: 0**	

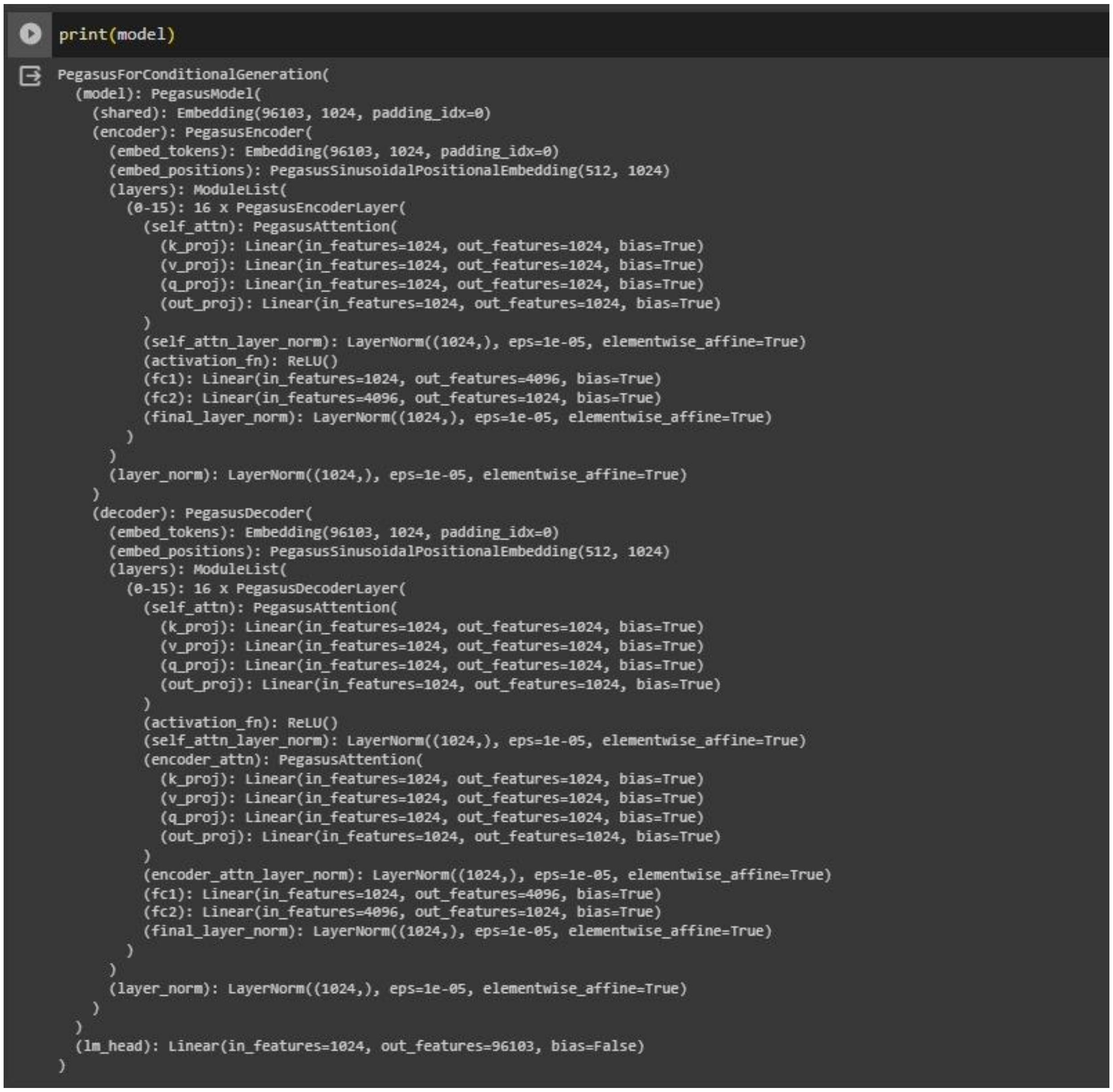
```
print(model)
```

```
PegasusForConditionalGeneration(
  (model): PegasusModel(
    (shared): Embedding(96103, 1024, padding_idx=0)
    (encoder): PegasusEncoder(
      (embed_tokens): Embedding(96103, 1024, padding_idx=0)
      (embed_positions): PegasusSinusoidalPositionalEmbedding(512, 1024)
      (layers): ModuleList(
        (0-15): 16 x PegasusEncoderLayer(
          (self_attn): PegasusAttention(
            (k_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (v_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (q_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (out_proj): Linear(in_features=1024, out_features=1024, bias=True)
          )
          (self_attn_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
          (activation_fn): ReLU()
          (fc1): Linear(in_features=1024, out_features=4096, bias=True)
          (fc2): Linear(in_features=4096, out_features=1024, bias=True)
          (final_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
        )
      )
      (layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
    )
    (decoder): PegasusDecoder(
      (embed_tokens): Embedding(96103, 1024, padding_idx=0)
      (embed_positions): PegasusSinusoidalPositionalEmbedding(512, 1024)
      (layers): ModuleList(
        (0-15): 16 x PegasusDecoderLayer(
          (self_attn): PegasusAttention(
            (k_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (v_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (q_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (out_proj): Linear(in_features=1024, out_features=1024, bias=True)
          )
          (activation_fn): ReLU()
          (self_attn_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
          (encoder_attn): PegasusAttention(
            (k_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (v_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (q_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (out_proj): Linear(in_features=1024, out_features=1024, bias=True)
          )
          (encoder_attn_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
          (fc1): Linear(in_features=1024, out_features=4096, bias=True)
          (fc2): Linear(in_features=4096, out_features=1024, bias=True)
          (final_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
        )
      )
      (layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
    )
  )
  (lm_head): Linear(in_features=1024, out_features=96103, bias=False)
)
```

2.	We used Rouge metrics for summarization.	Rouge1: 0.10526315789473684 Rouge2: 0.011834319526627219 RougeL: 0.0584795321637427 RougeLsum:0.10526315789473684	
3.	Confidence Score (Only Yolo Projects)	Class Detected - Confidence Score -	Not Applicable

```
rouge_names = ["rouge1", "rouge2", "rougeL", "rougeLsum"]

reference = dataset['train'][1]['document']

records = []

for model_name in summaries:
    rouge_metric.add(prediction = summaries[model_name], reference = reference )
    score = rouge_metric.compute()
    rouge_dict = dict((rn, score[rn].mid.fmeasure ) for rn in rouge_names )
    print('rouge_dict ', rouge_dict )
    records.append(rouge_dict)

pd.DataFrame.from_records(records, index = summaries.keys() )
```

```
rouge_dict  {'rouge1': 0.10526315789473684, 'rouge2': 0.011834319526627219, 'rougeL': 0.0584795321637427, 'rougeLsum': 0.10526315789473684}
          rouge1    rouge2   rougeL  rougeLsum
pegasus  0.105263  0.011834  0.05848   0.105263
```



```
print(model)
```

```
PegasusForConditionalGeneration(
  (model): PegasusModel(
    (shared): Embedding(96103, 1024, padding_idx=0)
    (encoder): PegasusEncoder(
      (embed_tokens): Embedding(96103, 1024, padding_idx=0)
      (embed_positions): PegasusSinusoidalPositionalEmbedding(512, 1024)
      (layers): ModuleList(
        (0-15): 16 x PegasusEncoderLayer(
          (self_attn): PegasusAttention(
            (k_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (v_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (q_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (out_proj): Linear(in_features=1024, out_features=1024, bias=True)
          )
          (self_attn_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
          (activation_fn): ReLU()
          (fc1): Linear(in_features=1024, out_features=4096, bias=True)
          (fc2): Linear(in_features=4096, out_features=1024, bias=True)
          (final_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
        )
      )
      (layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
    )
    (decoder): PegasusDecoder(
      (embed_tokens): Embedding(96103, 1024, padding_idx=0)
      (embed_positions): PegasusSinusoidalPositionalEmbedding(512, 1024)
      (layers): ModuleList(
        (0-15): 16 x PegasusDecoderLayer(
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            (v_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (q_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (out_proj): Linear(in_features=1024, out_features=1024, bias=True)
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            (k_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (v_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (q_proj): Linear(in_features=1024, out_features=1024, bias=True)
            (out_proj): Linear(in_features=1024, out_features=1024, bias=True)
          )
          (encoder_attn_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
          (fc1): Linear(in_features=1024, out_features=4096, bias=True)
          (fc2): Linear(in_features=4096, out_features=1024, bias=True)
          (final_layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
        )
      )
      (layer_norm): LayerNorm((1024,), eps=1e-05, elementwise_affine=True)
    )
  )
  (lm_head): Linear(in_features=1024, out_features=96103, bias=False)
)
```
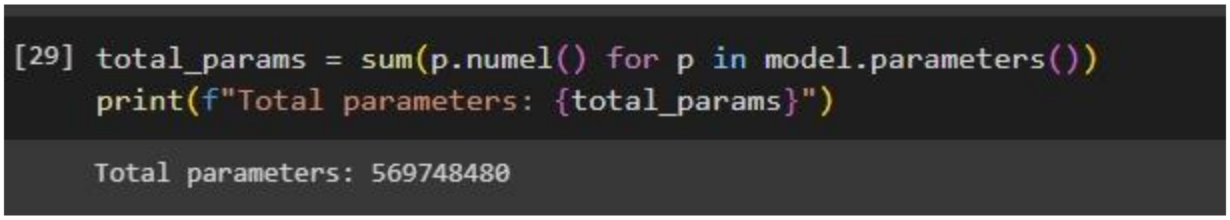
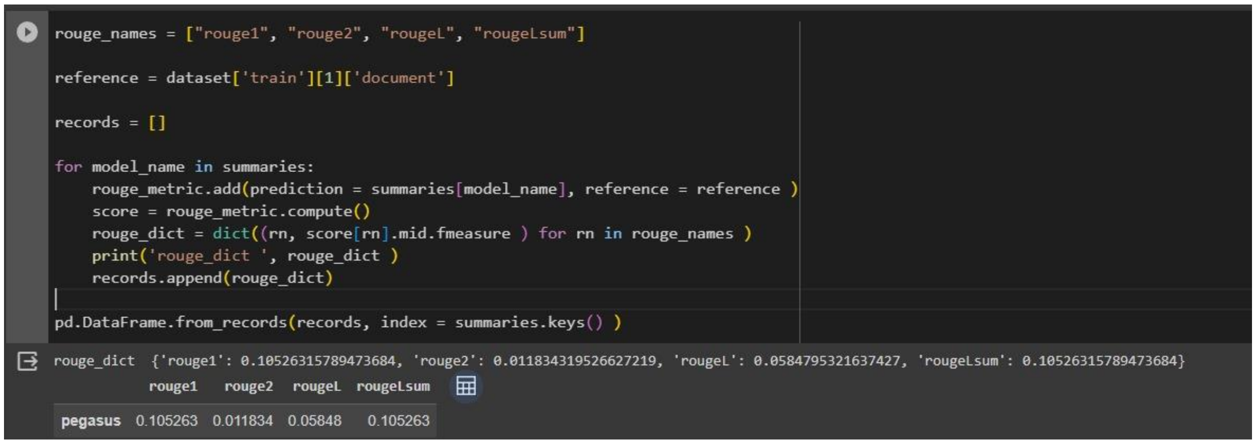



```
[29] total_params = sum(p.numel() for p in model.parameters())
     print(f"Total parameters: {total_params}")
```

```
Total parameters: 569748480
```



```python
rouge_names = ["rouge1", "rouge2", "rougeL", "rougeLsum"]

reference = dataset['train'][1]['document']

records = []

for model_name in summaries:
    rouge_metric.add(prediction = summaries[model_name], reference = reference )
    score = rouge_metric.compute()
    rouge_dict = dict((rn, score[rn].mid.fmeasure ) for rn in rouge_names )
    print('rouge_dict ', rouge_dict )
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pd.DataFrame.from_records(records, index = summaries.keys() )
```

```
rouge_dict  {'rouge1': 0.10526315789473684, 'rouge2': 0.011834319526627219, 'rougeL': 0.0584795321637427, 'rougeLsum': 0.10526315789473684}
```

	rouge1	rouge2	rougeL	rougeLsum
pegasus	0.105263	0.011834	0.05848	0.105263