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Simple abstractive text summarization with pretrained T5 — Text-To-Text Transfer Transformer

Text summarization with T5 Text-to-Text transformer

Ramsri Goutham · Follow
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T5 is a new transformer model from Google that is trained in an end-to-end manner with text as input and modified text as output. You can read more about it here.

It achieves state-of-the-art results on multiple NLP tasks like summarization, question answering, machine translation etc using a text-to-text transformer trained on a large text corpus.

Today we will see how we can use huggingface's transformers library to summarize any given text. T5 is an abstractive summarization algorithm. It means that it will rewrite sentences when necessary than just picking up sentences directly from the original text.

Install these libraries in your jupyter notebook or conda environment before you begin :

```
!pip install transformers==2.8.0
!pip install torch==1.4.0
```

Text input:

```
The US has "passed the peak" on new coronavirus cases, President
Donald Trump said and predicted that some states would reopen this
month.The US has over 637,000 confirmed Covid-19 cases and over 30,826
deaths, the highest for any country in the world.At the daily White
House coronavirus briefing on Wednesday, Trump said new guidelines t
reopen the country would be announced on Thursday after he speaks to
governors."We'll be the comeback kids, all of us," he said. "We want
to get our country back."The Trump administration has previously fixed
May 1 as a possible date to reopen the world's largest economy, but
the president said some states may be able to return to normalcy
earlier than that.
```

Summary from T5:

```
The us has over 637,000 confirmed Covid-19 cases and over 30,826
deaths. President Donald Trump predicts some states will reopen the
country in april, he said. "we'll be the comeback kids, all of us,"
the president says.
```

Analyzing the output:

If you see the algorithm has intelligently summarized with mentioning **April** although it was never mentioned in the original story**.** It also replaced **he** with **the president.** Cut short and removed the extra information after the comma in the sentence “over 30,826 deaths ….”

The code :

```
import torch
import json
from transformers import T5Tokenizer, T5ForConditionalGeneration, T5Config

model = T5ForConditionalGeneration.from_pretrained('t5-small')
tokenizer = T5Tokenizer.from_pretrained('t5-small')
device = torch.device('cpu')

text ="""
The US has "passed the peak" on new coronavirus cases, President Donald Trump said and predicted t

The US has over 637,000 confirmed Covid-19 cases and over 30,826 deaths, the highest for any

At the daily White House coronavirus briefing on Wednesday, Trump said new guidelines to reopen th

"We'll be the comeback kids, all of us," he said. "We want to get our country back."

The Trump administration has previously fixed May 1 as a possible date to reopen the world's large
"""


preprocess_text = text.strip().replace("\n","")
t5_prepared_Text = "summarize: "+preprocess_text
print ("original text preprocessed: \n", preprocess_text)

tokenized_text = tokenizer.encode(t5_prepared_Text, return_tensors="pt").to(device)


# summmarize
summary_ids = model.generate(tokenized_text,
                                    num_beams=4,
                                    no_repeat_ngram_size=2,
                                    min_length=30,
                                    max_length=100,
                                    early_stopping=True)

output = tokenizer.decode(summary_ids[0], skip_special_tokens=True)

print ("\n\nSummarized text: \n",output)

# Summarized output from above ::::::::::
# the us has over 637,000 confirmed Covid-19 cases and over 30,826 deaths.
# president Donald Trump predicts some states will reopen the country in april, he said.
# "we'll be the comeback kids, all of us," the president says.
```

T5_transformers_summarization.py hosted with ❤ by GitHub view raw

The same code inline as some users have reported that the Github Gist wasn't loading :

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in april, he said.
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The summarized output as mentioned above is -

```
The us has over 637,000 confirmed Covid-19 cases and over 30,826
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country in april, he said. "we'll be the comeback kids, all of us,"
the president says.
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The key point to note in the code above is that we prepend our text with **"summarize: "**

corresponding string eg: **"translate English to German: "** for translation task.

Happy NLP exploration and if you loved the content, feel free to find me on Twitter.

If you want to learn modern NLP using transformers, check out my course Question generation using NLP

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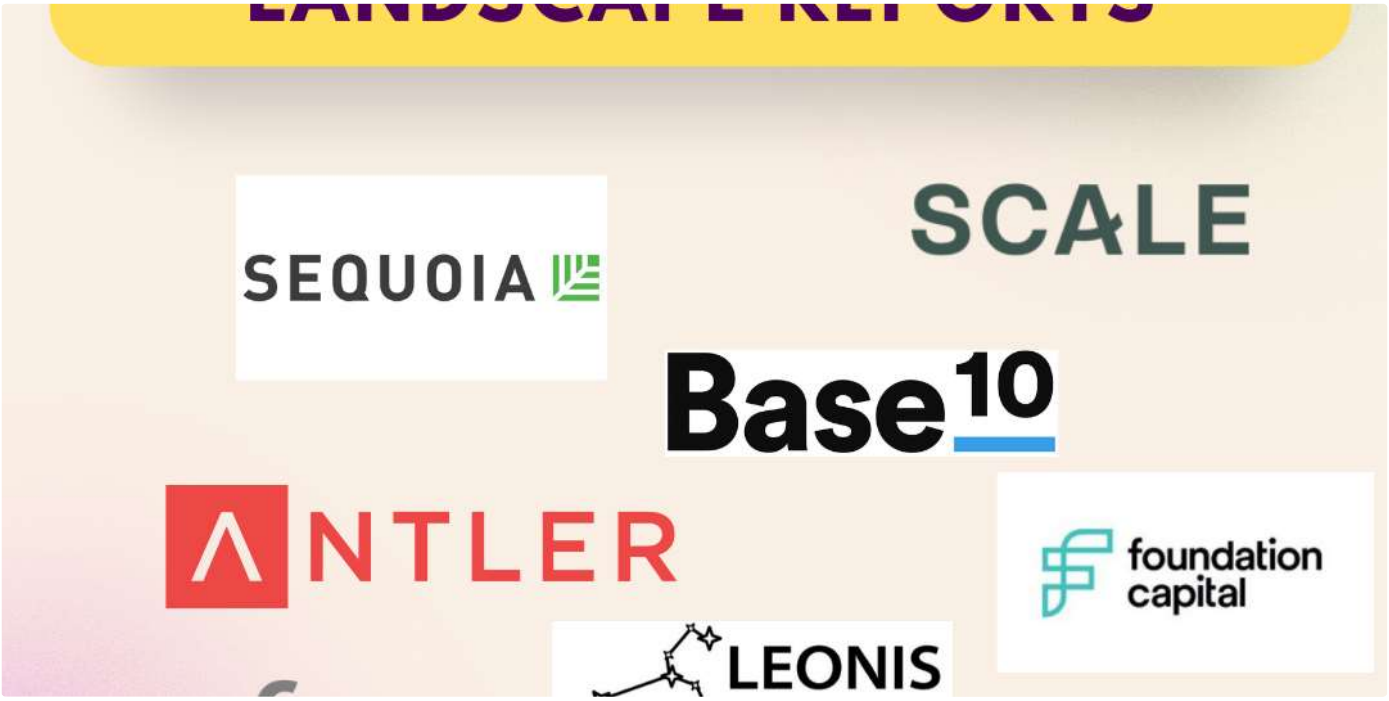

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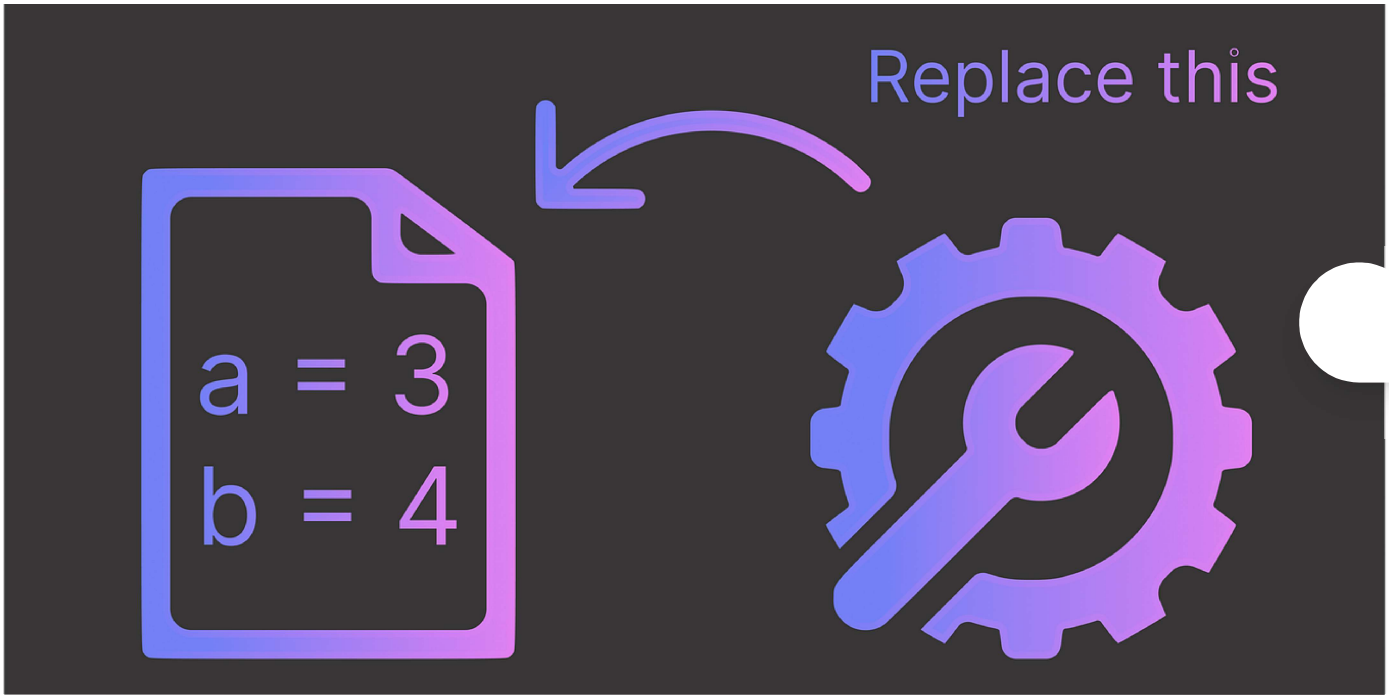

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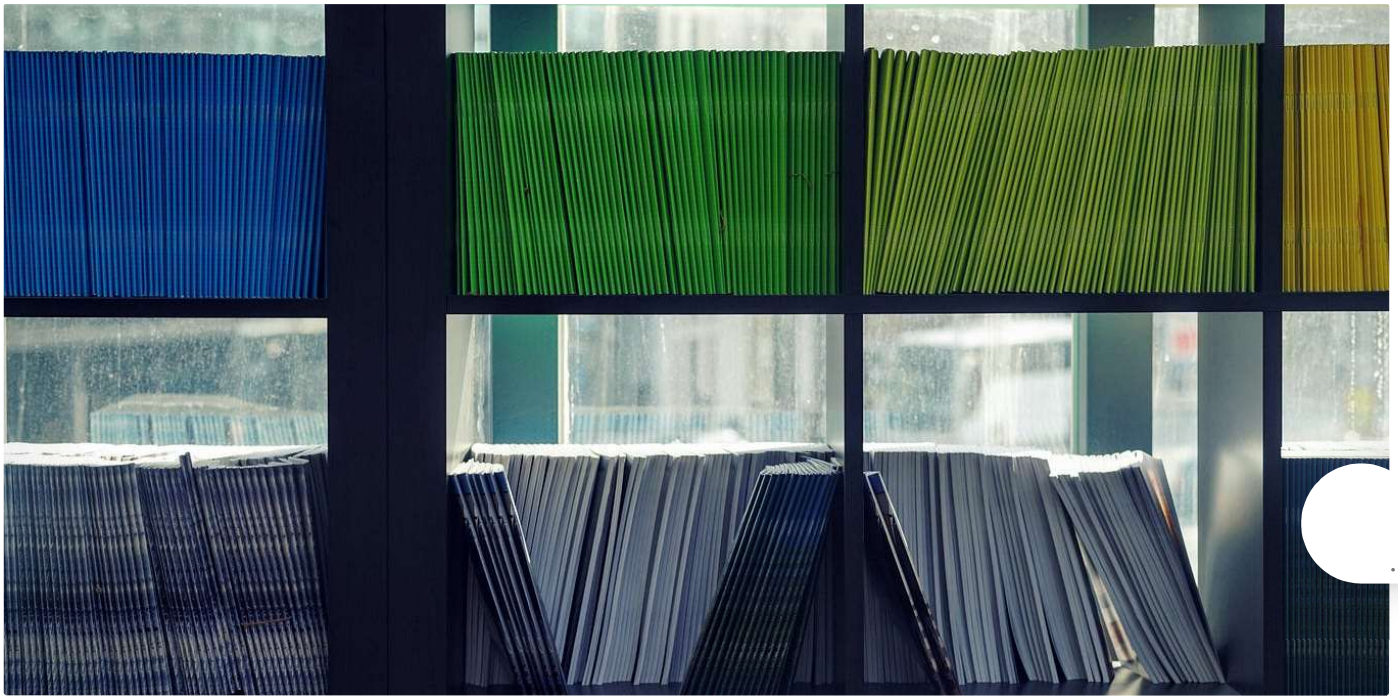

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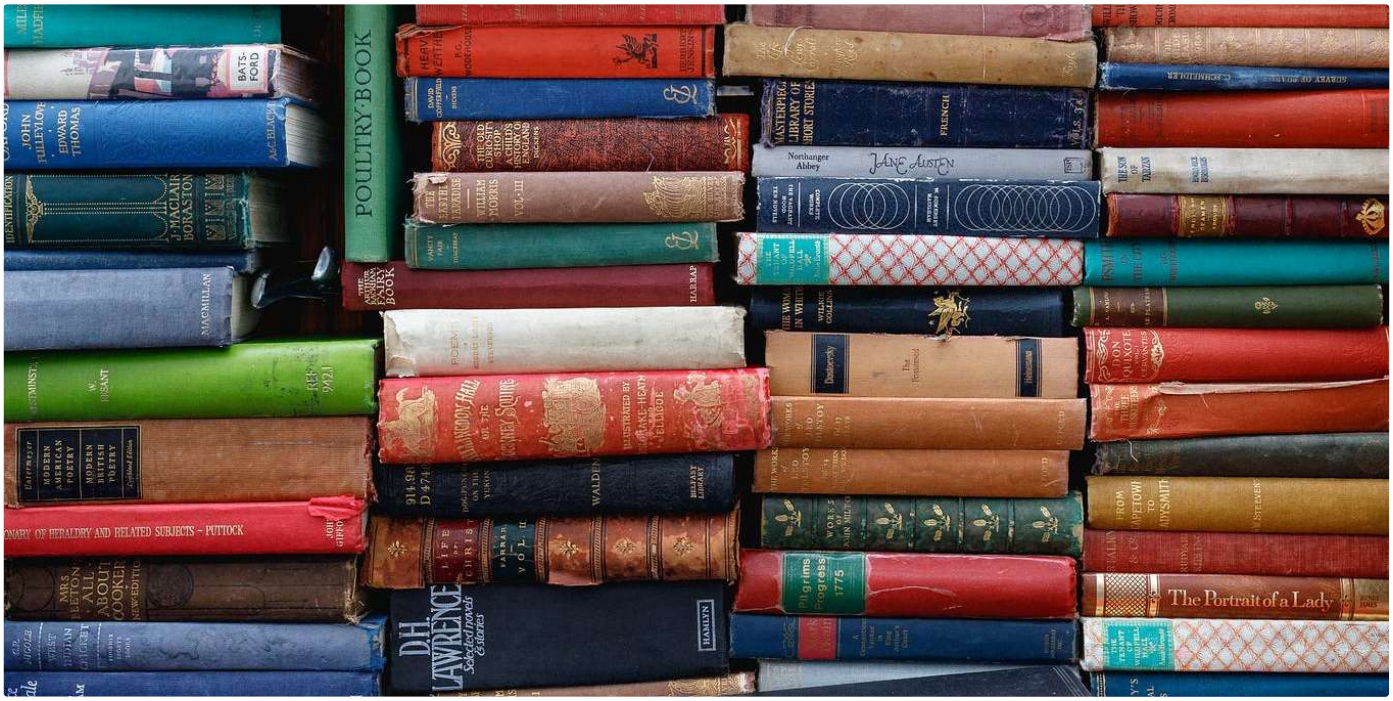

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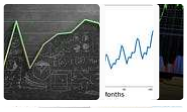

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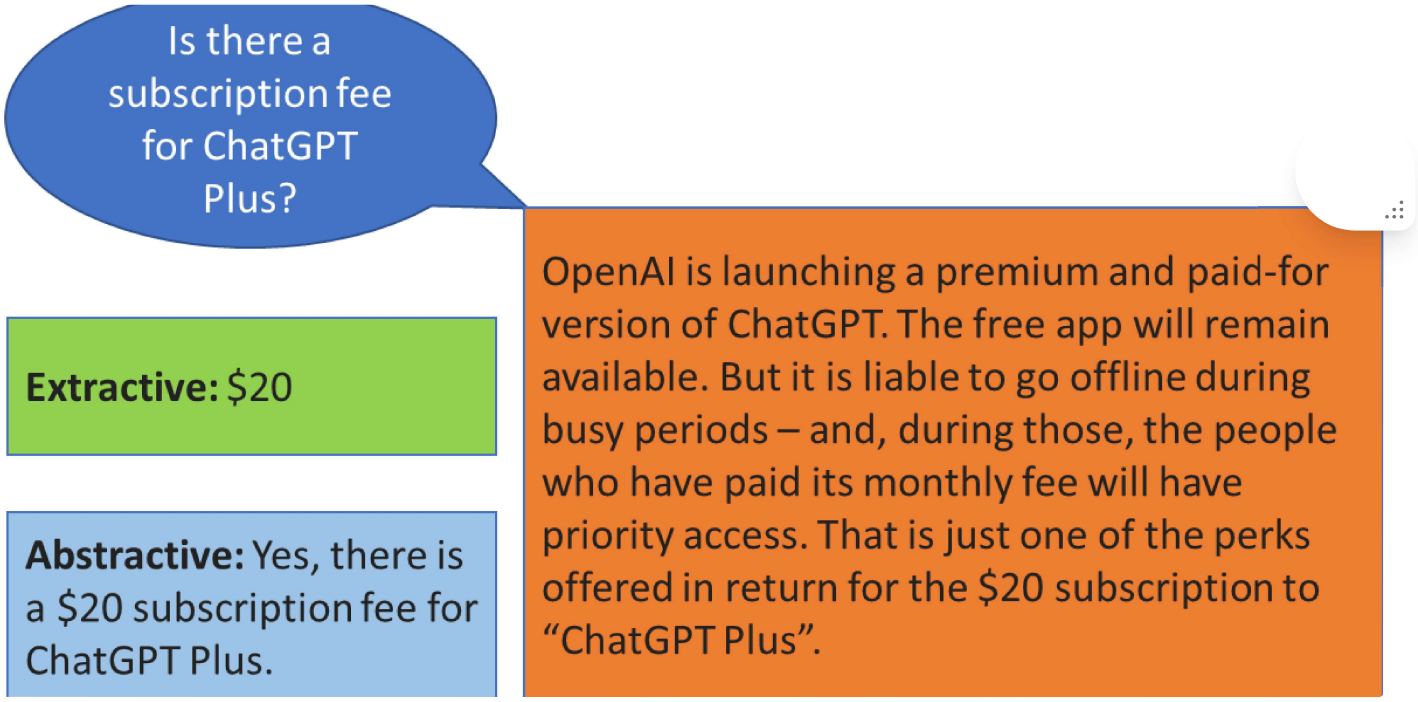

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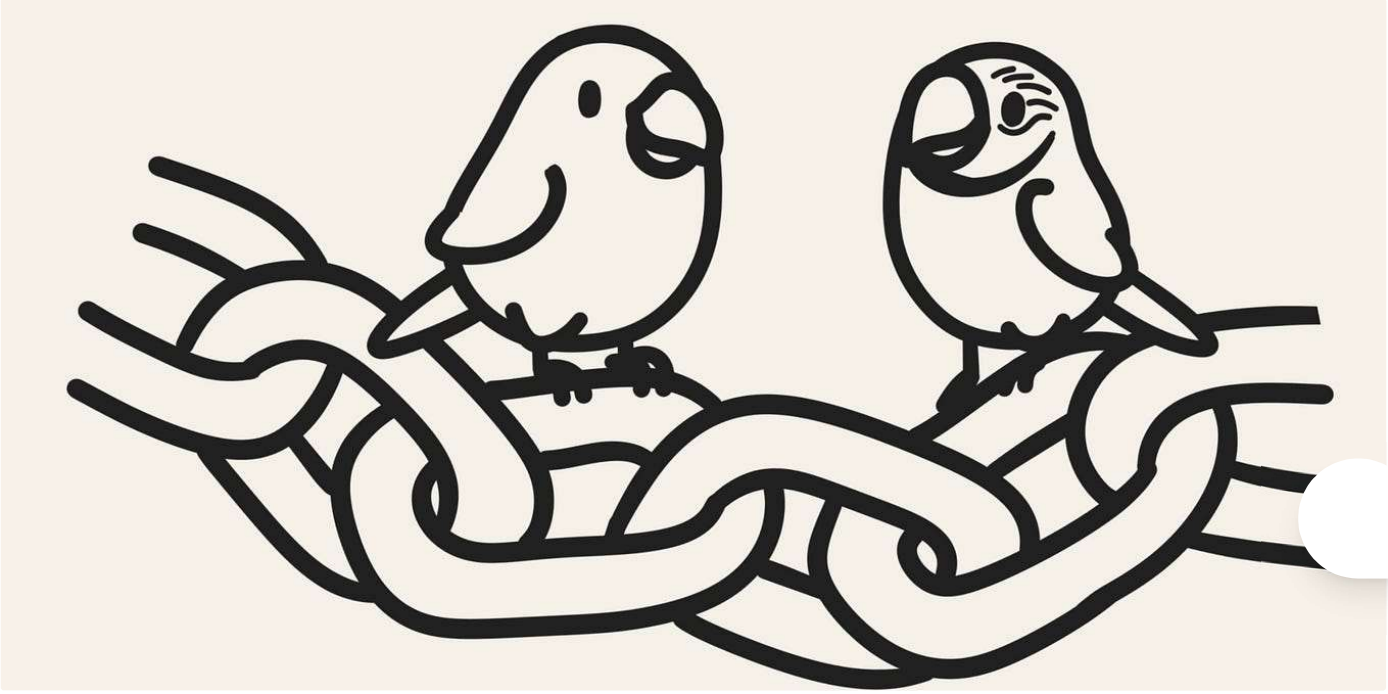

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