

# Assignment 1: Hugging Face Model Exploration

## Objective

The objective of this assignment is to explore an open-source language model (LLM) from the Hugging Face Hub, install it locally, and perform a simple NLP task to understand how transformers can be applied in real-world scenarios.

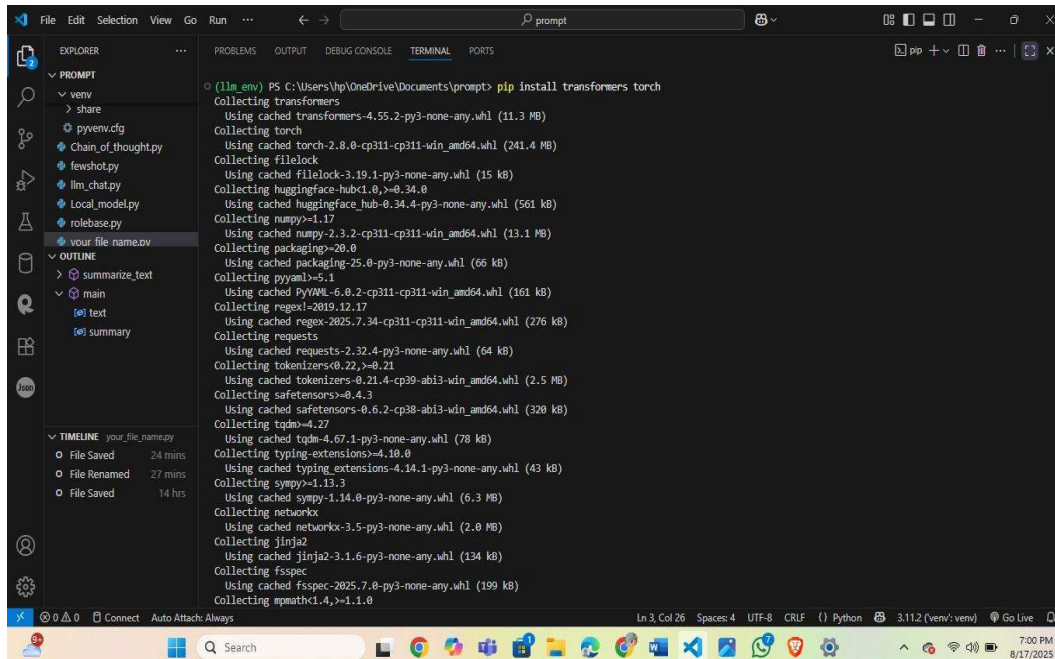
## Steps

### 1. Environment Setup

```
# Create a new virtual environment  
python -m venv llm_env
```

```
# Activate the environment (Windows)  
llm_env\Scripts\activate
```

```
# Install Hugging Face Transformers and Torch  
pip install transformers torch
```



## 2. Model Selection

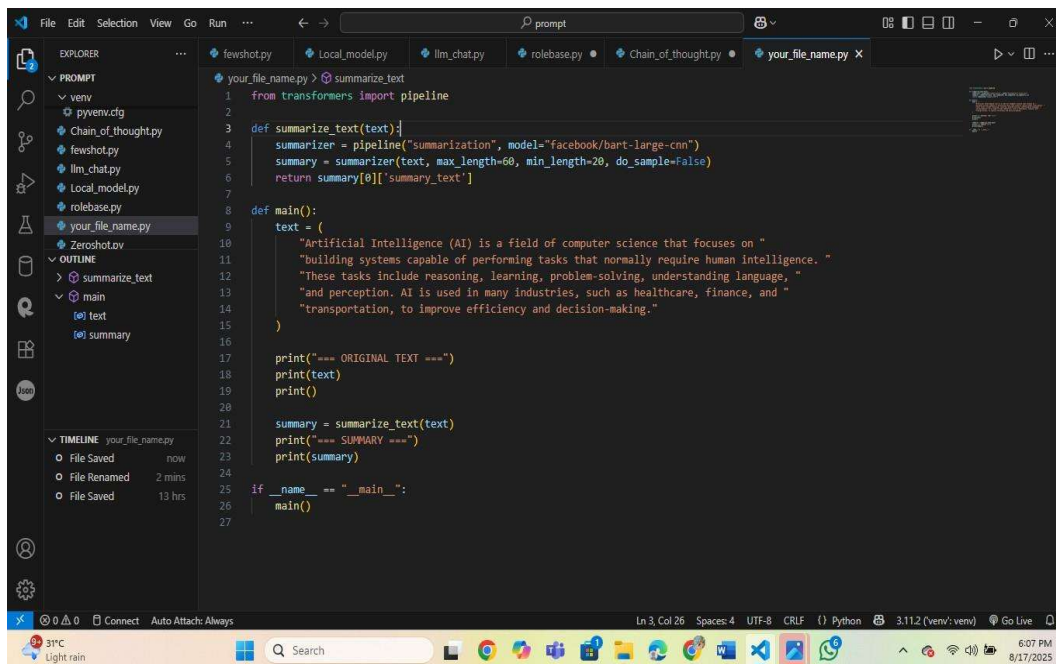
For this task, the chosen model is facebook/bart-large-cnn, a transformer-based model widely used for text summarization tasks.

## 3. Model Loading in Python

from transformers import pipeline

#Model Decelation

summarizer = pipeline("summarization", model="facebook/bart-large-cnn")



The screenshot shows a Visual Studio Code editor window with a Python file named 'your\_file\_name.py'. The code defines a function 'summarize\_text(text)' that uses the 'facebook/bart-large-cnn' model to summarize text. The 'main()' function contains a sample text about Artificial Intelligence (AI) and calls 'summarize\_text(text)' to generate a summary. The output shows the original text and the summarized text.

```
1 from transformers import pipeline
2
3 def summarize_text(text):
4     summarizer = pipeline("summarization", model="facebook/bart-large-cnn")
5     summary = summarizer(text, max_length=60, min_length=20, do_sample=False)
6     return summary[0]['summary_text']
7
8 def main():
9     text = (
10         "Artificial Intelligence (AI) is a field of computer science that focuses on "
11         "building systems capable of performing tasks that normally require human intelligence. "
12         "These tasks include reasoning, learning, problem-solving, understanding language, "
13         "and perception. AI is used in many industries, such as healthcare, finance, and "
14         "transportation, to improve efficiency and decision-making."
15     )
16
17     print("=== ORIGINAL TEXT ===")
18     print(text)
19     print()
20
21     summary = summarize_text(text)
22     print("=== SUMMARY ===")
23     print(summary)
24
25 if __name__ == "__main__":
26     main()
27
```

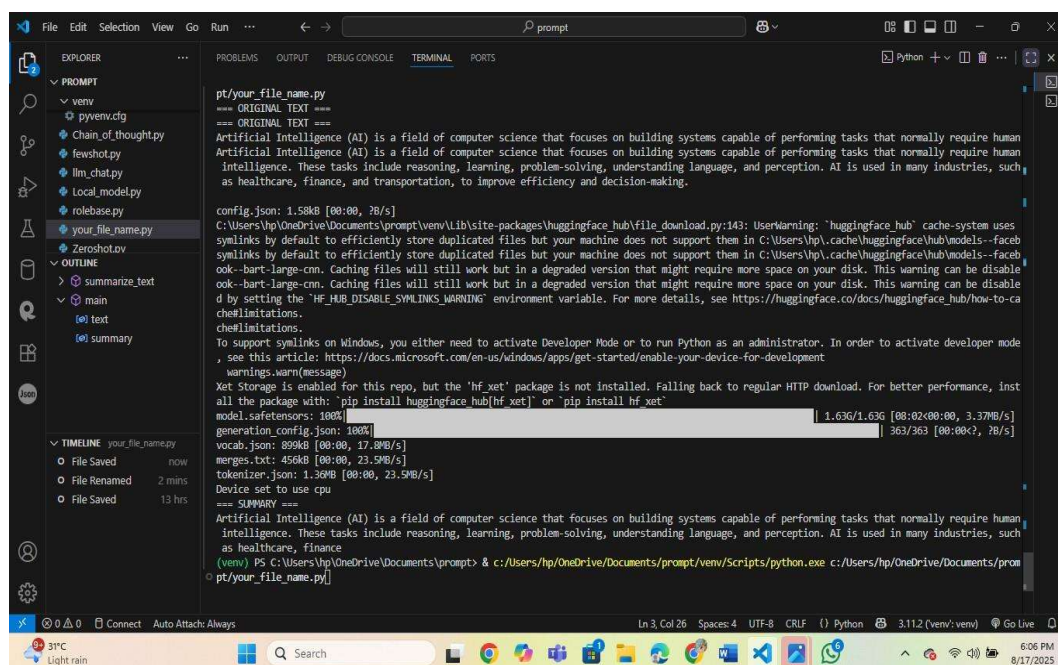
#### 4. Sample Output

=== ORIGINAL TEXT ===

Artificial Intelligence (AI) is a field of computer science that focuses on building systems capable of performing tasks that normally require human intelligence. These tasks include reasoning, learning, problem-solving, understanding language, and perception. AI is used in many industries, such as healthcare, finance, and transportation, to improve efficiency and decision-making.

=== SUMMARY ===

AI is a branch of computer science focused on creating systems that perform tasks requiring human intelligence. It is applied across industries like healthcare, finance, and transportation to enhance efficiency and decision-making.



```
pt/your_file_name.py
=== ORIGINAL TEXT ===
=== ORIGINAL TEXT ===
Artificial Intelligence (AI) is a field of computer science that focuses on building systems capable of performing tasks that normally require human intelligence. These tasks include reasoning, learning, problem-solving, understanding language, and perception. AI is used in many industries, such as healthcare, finance, and transportation, to improve efficiency and decision-making.

config.json: 1.58kB [00:00, 78/s]
c:\Users\hp\OneDrive\Documents\prompt\venv\Lib\site-packages\huggingface_hub\file_download.py:143: UserWarning: 'huggingface_hub' cache-system uses symlinks by default to efficiently store duplicated files but your machine does not support them in C:\Users\hp\cache\huggingface\hub\models--facebook-bart-large-cnn. Caching files will still work but in a degraded version that might require more space on your disk. This warning can be disabled by setting the 'HF_HUB_DISABLE_SYMLINKS_WARNING' environment variable. For more details, see https://huggingface.co/docs/huggingface_hub/how-to-cache#limitations.
To support symlinks on Windows, you either need to activate Developer Mode or to run Python as an administrator. In order to activate developer mode, see this article: https://docs.microsoft.com/en-us/windows/apps/get-started/enable-your-device-for-development
warnings.warn(message)
Xet Storage is enabled for this repo, but the 'hf_xet' package is not installed. Falling back to regular HTTP download. For better performance, install all the package with: 'pip install huggingface_hub[hf_xet]' or 'pip install hf_xet'
model.safetensors: 188kB [00:00, 3.37MB/s]
generation_config.json: 100% [00:00, 1.63G/1.63G [00:00<00:00, 3.37MB/s]
vocab.json: 899kB [00:00, 17.0MB/s]
merges.txt: 456kB [00:00, 23.5MB/s]
tokenizer.json: 1.39kB [00:00, 23.5MB/s]
Device set to use cpu
=== SUMMARY ===
Artificial Intelligence (AI) is a field of computer science that focuses on building systems capable of performing tasks that normally require human intelligence. These tasks include reasoning, learning, problem-solving, understanding language, and perception. AI is used in many industries, such as healthcare, finance
(venv) PS C:\Users\hp\OneDrive\Documents\prompt> & c:\Users\hp\OneDrive\Documents\prompt\venv\Scripts\python.exe c:\Users\hp\OneDrive\Documents\prompt\your_file_name.py
```

## Reflection

This exercise demonstrated how to set up a Python environment, install machine learning libraries, and use an open-source model from Hugging Face. By working with BART, we performed text summarization, gaining insights into how transformer-based models condense natural language while preserving key meaning. This hands-on approach builds the foundation for working with larger LLMs in local or cloud environments.