**DAY:28 NLP APPLICATIONS**

**Text Summarizer**

**Step 1: Install the Transformers library**

!pip install transformers

**Step 2: Install spaCy**

!pip install spacy

**Step 3: Download English language model for spaCy**

!python -m spacy download en\_core\_web\_sm

**Step 4: Import required libraries**

import spacy

from transformers import pipeline

from heapq import nlargest

from spacy.lang.en.stop\_words import STOP\_WORDS

from string import punctuation

**Step 5: Set up the summarizer functions**

# Load NLP models

nlp = spacy.load("en\_core\_web\_sm")

abstractive\_summarizer = pipeline("summarization", model="sshleifer/distilbart-cnn-12-6")

# Extractive summarizer

def extractive\_summary(text, top\_n=3):

doc = nlp(text)

word\_freq = {}

for word in doc:

if word.text.lower() not in STOP\_WORDS and word.text.lower() not in punctuation:

word\_freq[word.text.lower()] = word\_freq.get(word.text.lower(), 0) + 1

max\_freq = max(word\_freq.values())

word\_freq = {word: freq / max\_freq for word, freq in word\_freq.items()}

sent\_scores = {}

for sent in doc.sents:

for word in sent:

if word.text.lower() in word\_freq:

sent\_scores[sent] = sent\_scores.get(sent, 0) + word\_freq[word.text.lower()]

top\_sents = nlargest(top\_n, sent\_scores, key=sent\_scores.get)

return " ".join([sent.text for sent in top\_sents])

# Hybrid summarizer

def hybrid\_summary(text, top\_n=3):

extract = extractive\_summary(text, top\_n=top\_n)

abs\_result = abstractive\_summarizer(extract, max\_length=60, min\_length=20, do\_sample=False)

return abs\_result[0]['summary\_text']

**Step 6: Get interactive input from the user**

user\_input = input("🔹 Enter a paragraph to summarize:\n")

summary = hybrid\_summary(user\_input, top\_n=3)

print("\n✅ Hybrid Summary:\n", summary)

**Original Input:**

"Artificial Intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning, and self-correction. AI is being used in various applications such as natural language processing, robotics, and machine learning. As technology advances, AI has the potential to revolutionize industries by improving efficiency, enhancing decision-making, and creating new opportunities for businesses."

**Summary Output:**

"Artificial Intelligence (AI) is being used in various applications such as natural language processing, robotics, and machine learning. AI has the potential to revolutionize industries by improving efficiency, enhancing decision-making, and creating new opportunities for businesses."

