

PG7: Summarize long texts using a pre-trained summarization model using Hugging face model. Load the summarization pipeline. Take a passage as input and obtain the summarized text.

Soln:

```
from transformers import pipeline

# Load the summarization pipeline

summarizer = pipeline("summarization")

# Expanded input passage

text = ""
```

Artificial Intelligence (AI) is transforming education by introducing adaptive learning techniques, automating administrative processes, and enabling intelligent tutoring systems. AI-driven learning platforms analyze vast amounts of student data, including learning habits, strengths, and weaknesses, to personalize educational experiences. This customization allows students to progress at their own pace, ensuring that they receive content suited to their proficiency level. Additionally, AI chatbots and virtual assistants are becoming common in academic institutions, providing real-time support to students. These tools answer frequently asked questions, guide students through complex topics, and help with scheduling and reminders. Educators also benefit from AI-powered grading systems that assess assignments, quizzes, and exams, significantly reducing workload and providing instant feedback. Moreover, AI enhances accessibility in education by offering language translation services, speech-to-text conversion, and assistive technologies for students with disabilities. By breaking language barriers and supporting diverse learning needs, AI makes education more inclusive. However, challenges remain in implementing AI in education. Data privacy concerns arise as student information is collected and analyzed, requiring robust security measures. There is also the risk of AI biases, where algorithmic decisions may favor certain groups over others due to biased training data. Additionally, educators must undergo proper training to integrate AI effectively into their teaching methods. To fully harness AI's potential in education, institutions must adopt ethical AI frameworks, ensure transparency in algorithmic decision-making, and continuously update their technological infrastructure. Collaboration between educators, policymakers, and AI developers is crucial in shaping the future of education and ensuring that AI serves as an enabler rather than a disruptor."

```
# Generate the summary with longer output

summary = summarizer(long_text, max_length=100, min_length=50, do_sample=False)

# Print the summarized text

print("Summarized Text:\n", summary[0]['summary_text'])
```

Output:

Summarized Text:

Artificial Intelligence (AI) is transforming education by introducing adaptive learning techniques, automating administrative processes, and enabling intelligent tutoring systems. AI chatbots and virtual assistants are becoming common in academic institutions, providing real-time support to students. Data privacy concerns arise as student information is collected and analyzed, requiring robust security measures.

```
from langchain_huggingface import HuggingFaceEndpoint
```

```
# get a token: https://huggingface.co/docs/api-inference/quicktour#get-your-api-token
```

```
from getpass import getpass
```

```
HUGGINGFACEHUB_API_TOKEN = getpass()
```

```
import os
```

```
os.environ["HUGGINGFACEHUB_API_TOKEN"] = HUGGINGFACEHUB_API_TOKEN
```

text = f"""Artificial Intelligence (AI) has emerged as a cornerstone of innovation in education, fundamentally reshaping how knowledge is delivered, personalized, and assessed. As institutions increasingly integrate AI into their pedagogical frameworks, the impact extends beyond automation to the creation of intelligent learning environments that foster engagement, accessibility, and efficiency.

One of the most profound contributions of AI to education is adaptive learning, a paradigm that leverages data-driven insights to customize educational content for individual students. Unlike traditional one-size-fits-all approaches, AI-powered platforms analyze student performance, learning patterns, and cognitive preferences to adjust the difficulty level, pace, and mode of instruction in real-time. This ensures that students who struggle with certain concepts receive targeted reinforcement, while advanced learners can progress without unnecessary repetition.

Intelligent tutoring systems (ITS) represent another significant advancement, providing students with personalized, AI-driven guidance outside of traditional classroom settings. These systems, built on natural language processing and machine learning, simulate human tutors by offering step-by-step explanations, identifying gaps in understanding, and adapting instructional methods accordingly. AI tutors are particularly valuable in disciplines such as mathematics, science, and language learning, where real-time feedback and iterative problem-solving are crucial to mastery.

Beyond individualized learning, AI enhances collaborative education by fostering interactive, technology-driven experiences. Virtual reality (VR) and augmented reality (AR) applications, powered by AI algorithms, create immersive simulations that enable students to explore historical events, conduct virtual science experiments, and engage in role-based learning. These innovations bridge the gap between theoretical knowledge and practical application, making complex concepts more tangible and accessible.

AI also plays a critical role in automating administrative functions, thereby allowing educators to allocate more time to teaching and mentorship. Automated grading systems can evaluate assignments, quizzes, and even subjective responses with increasing accuracy, while AI-driven scheduling tools streamline academic operations. Additionally, AI chatbots and virtual assistants handle routine queries from students, reducing response times and improving administrative efficiency.

One of the most significant yet underexplored benefits of AI in education is its potential to enhance accessibility and inclusivity. Speech-to-text and text-to-speech technologies enable students with disabilities to engage with learning materials more effectively. AI-driven translation services remove language barriers, allowing students from diverse linguistic backgrounds to access high-quality educational content. Moreover, AI-powered predictive analytics can identify students at risk of falling behind, enabling early interventions to prevent academic disengagement.

Despite these advantages, AI's integration into education is not without challenges. Ethical concerns surrounding data privacy, bias in AI algorithms, and the digital divide must be addressed to ensure equitable access to AI-driven education. Institutions must adopt transparent AI governance policies, emphasizing accountability and inclusivity in algorithmic decision-making. Additionally, educators must be equipped with the necessary training to effectively implement AI tools within their instructional practices, ensuring that technology serves as an enabler rather than a disruptor.

As AI continues to evolve, its role in education will extend beyond content delivery to fostering critical thinking, creativity, and problem-solving skills. The future of education lies not in replacing human educators but in augmenting their capabilities, enabling a more engaging, efficient, and personalized learning experience for students worldwide. By striking a balance between technological innovation and ethical responsibility, AI has the potential to democratize education and bridge learning gaps on a global scale.

"""

```
import requests
```

```
API_URL = "https://api-inference.huggingface.co/models/facebook/bart-large-cnn"
```

```
headers = {"Authorization": "Bearer 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"}
```

```
def query(payload):
```

```
    response = requests.post(API_URL, headers=headers, json=payload)
```

```
    return response.json()
```

```
output = query({"inputs": text}) # Remove the curly braces
```

output

```
[{'summary_text': 'Artificial Intelligence (AI) has emerged as a  
cornerstone of innovation in education. As institutions increasingly  
integrate AI into their pedagogical frameworks, the impact extends beyond  
automation to the creation of intelligent learning environments. The future  
of education lies not in replacing human educators but in augmenting their  
capabilities, enabling a more engaging, efficient, and personalized  
learning experience.'}]
```

output[0]['summary_text']

```
'Artificial Intelligence (AI) has emerged as a cornerstone of innovation in  
education. As institutions increasingly integrate AI into their pedagogical  
frameworks, the impact extends beyond automation to the creation of  
intelligent learning environments. The future of education lies not in  
replacing human educators but in augmenting their capabilities, enabling a  
more engaging, efficient, and personalized learning experience.'
```