1)

Sample:

Dunnes Stores and SuperValu are set to shake up their opening hours over the coming weekend. With the May bank holiday approaching, supermarkets up and down the country will be adjusting their opening hours. Dunnes and Supervalu are no different, with both expected to have adjusted opening hours on May 5. The usual operating hours on a bank holiday for Dunnes are from 9 am to 7 pm. Meanwhile, the vast majority of Supervalu stores will be open from 9 am to 10 pm. Customers are advised to use the store locator on both companies' websites to find the exact hours for their local shops. Ireland's good weather could potentially last into the bank holiday weekend. A weather map shared online has shown that some incredible heat could hit Ireland, 13C over the average temperature for this time of the year. Peter Dynes, the Managing Director at the nonprofit organisation Mirrors for Earth's Energy Rebalancing (MEER) shared the map on X, which shows Ireland and the UK in red as temperatures look to rocket. This week saw temperatures soar into the 20s, with the hottest day ever recorded in April in Ireland coming on Wednesday in Athenry as it reached 25.8C. Meanwhile, Met Éireann's forecast has predicted that things will remain dry but become cooler as the week comes to an end. Friday will start dry "with a mix of cloud and sunny spells, though it will turn cloudier from the north with a few light showers developing." Temperatures are set to be around 13C in the north and 18C in the south. Saturday and Sunday should be generally sunny with some cloudy spells as temperatures range from 9C to 16C. Join Galway Beo’s top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our community, you can check out any time you like. If you’re curious, you can read our Privacy Notice.

Manually (without PSO):

METEOR Score: 0.2053

Generated New Text:

Sainsbury's and Tesco are anticipated to revise their operation times throughout the forthcoming weekend. With the June public holiday around the corner, grocers across the UK will modify their business hours. Sainsbury's and Tesco are no exception, as both foresee changes to their store timings on June 1. Typically, on a public holiday, Sainsbury's operates from 8 am to 6 pm. On the other hand, the majority of Tesco supermarkets extend their hours from 8 am to 11 pm. Shoppers are encouraged to use the store peeper feature on both companies' websites to verify precise schedules for their local outlets.

For the upcoming public holiday, weather forecasts suggest the UK might enjoy glorious sun. A climate map circulating online forecasts possible heatwaves hitting the UK, rising 15C beyond the average yearly temperature. Caitlyn Fraser, the Executive Director at the non-profit organisation Global Heat Maps (GHM), circulated the map showing the surging temperatures in the UK. This week has already witnessed temperatures breaching the mid-20s, with record-breaking April warmth witnessed in Lincolnshire with a high of 27.2C. However, according to the Met Office prediction, the weather would stay dry but gradually cool toward the week's end. On Friday, expectations are for mixed weather with sunny spells and partial cloud, with a chance for occasional light showers.

Temperature forecasts stand at around 14C in northern parts and 19C in the south.

The code:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Dunnes Stores and SuperValu are set to shake up their opening hours over the coming weekend. With the May bank holiday approaching, supermarkets up and down the country will be adjusting their opening hours. Dunnes and Supervalu are no different, with both expected to have adjusted opening hours on May 5. The usual operating hours on a bank holiday for Dunnes are from 9 am to 7 pm. Meanwhile, the vast majority of Supervalu stores will be open from 9 am to 10 pm. Customers are advised to use the store locator on both companies' websites to find the exact hours for their local shops. Ireland's good weather could potentially last into the bank holiday weekend. A weather map shared online has shown that some incredible heat could hit Ireland, 13C over the average temperature for this time of the year. Peter Dynes, the Managing Director at the nonprofit organisation Mirrors for Earth's Energy Rebalancing (MEER) shared the map on X, which shows Ireland and the UK in red as temperatures look to rocket. This week saw temperatures soar into the 20s, with the hottest day ever recorded in April in Ireland coming on Wednesday in Athenry as it reached 25.8C. Meanwhile, Met Éireann's forecast has predicted that things will remain dry but become cooler as the week comes to an end. Friday will start dry "with a mix of cloud and sunny spells, though it will turn cloudier from the north with a few light showers developing." Temperatures are set to be around 13C in the north and 18C in the south. Saturday and Sunday should be generally sunny with some cloudy spells as temperatures range from 9C to 16C. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=150, max\_words=200):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. The output should be between 150-200 words."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=300,

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

Optimized:

Starting PSO optimization...

Temp: 0.01, Tokens: 175, METEOR: 0.5933

Temp: 0.77, Tokens: 209, METEOR: 0.3518

Temp: 0.45, Tokens: 446, METEOR: 0.4295

Temp: 0.50, Tokens: 268, METEOR: 0.4695

Temp: 0.68, Tokens: 140, METEOR: 0.3590

Temp: 0.51, Tokens: 100, METEOR: 0.2295

Temp: 1.00, Tokens: 100, METEOR: 0.1845

Temp: 0.97, Tokens: 214, METEOR: 0.4052

Temp: 0.81, Tokens: 313, METEOR: 0.4432

Temp: 0.86, Tokens: 167, METEOR: 0.3762

Temp: 0.83, Tokens: 100, METEOR: 0.1404

Temp: 1.00, Tokens: 100, METEOR: 0.1774

Temp: 1.00, Tokens: 100, METEOR: 0.1972

Temp: 0.97, Tokens: 258, METEOR: 0.3302

Temp: 0.88, Tokens: 168, METEOR: 0.3085

Temp: 0.99, Tokens: 100, METEOR: 0.1539

Temp: 0.99, Tokens: 100, METEOR: 0.2446

Temp: 1.00, Tokens: 100, METEOR: 0.2432

Temp: 0.99, Tokens: 214, METEOR: 0.3364

Temp: 0.88, Tokens: 136, METEOR: 0.3267

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8273

Max Tokens: 100

METEOR Score: 0.1662

Generated Text:

Marks & Spencer and Tesco are planning to tweak their operating schedules this coming weekend. As the August bank holiday looms, numerous grocery stores all over the nation are anticipated to modify their working hours. Both Marks & Spencer and Tesco are part of this group, with both likely to have altered business hours on August 31. Typically on a bank holiday, Marks & Spencer operates from 8 am till 8 pm. In contrast, most Tesco stores remain open from 7 am till

The code:

!pip install pyswarm # Install the pyswarm package

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso # Now pyswarm can be imported

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Shortened original text (about 50% of the original length)

original\_text = """

Dunnes Stores and SuperValu are set to shake up their opening hours over the coming weekend. With the May bank holiday approaching, supermarkets up and down the country will be adjusting their opening hours. Dunnes and Supervalu are no different, with both expected to have adjusted opening hours on May 5. The usual operating hours on a bank holiday for Dunnes are from 9 am to 7 pm. Meanwhile, the vast majority of Supervalu stores will be open from 9 am to 10 pm. Customers are advised to use the store locator on both companies' websites to find the exact hours for their local shops. Ireland's good weather could potentially last into the bank holiday weekend. A weather map shared online has shown that some incredible heat could hit Ireland, 13C over the average temperature for this time of the year.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=300):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=int(max\_tokens)

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {int(max\_tokens)}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters

lb = [0.01, 100]  # Lower bounds [temperature, max\_tokens]

ub = [1.0, 500]   # Upper bounds [temperature, max\_tokens]

swarmsize = 5     # Keep original swarm size for better optimization

maxiter = 3       # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=int(best\_max\_tokens)

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {int(best\_max\_tokens)}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

The manual approach produced a complete, coherent text with a METEOR score of 0.2053, effectively transforming Irish supermarkets into UK ones while maintaining the news article style and structure. The PSO optimization found parameters (Temperature: 0.8273, Max Tokens: 100) that achieved an even lower METEOR score of 0.1662, indicating greater originality, but the generated text was cut off mid-sentence due to the low token limit.

2)

SAMPLE:

Galway is in for a day of family friendly and pet friendly activities to celebrate the opening of a new store in the east of the city. Petmania will officially reveal its new Galway store on Saturday, 20 January with an open invite to families and pet owners in Galway and surrounding areas to join in with the celebrations on the opening day. The chain, which has 12 superstores nationwide, has moved from its previous location in Wellpark Retail Centre to a few hundred meters away to a different unit. Read more: Galway area frightened sick after 'suspicious' incident as gardai searching trio This new store has a whole "new look", the company said, and will host brand new services open for the first time to Irish customers. The pet experts will be marking the official opening with several special guests and family friendly activities for all family members to get involved in. ‘Puppucinos’ and pet-friendly 'pupcakes' can be enjoyed by pets in attendance, while dog grooming demos and complimentary goodie bags for some lucky customers will be available on the day. There will be face-painting for kids as well as balloon modelers creating some fun air-filled pets to take home. There will also be a number of expert talks where customers can get a glimpse of the unique services that will be offered at the store on an ongoing basis, including a walk-in microchipping event available to those with newly welcomed pups and rescue dogs in need of the service. Galway Cat Centre will have special guests and will be the perfect opportunity for pet-owners and animal fans to visit the new store and explore the specialised areas, as well as chatting to the talented team members on site about all things health and wellness. Speaking about the continued expansion of Petmania, Petmania's spokesperson Emily Miller, said: “We are delighted to announce the opening of our newly located and ‘new look’ store in Galway, and welcoming back through our doors our loyal customers and new pet-owners from the area." "We are so excited to welcome the community and their furry friends to their new one-stop-shop for all pet essentials.” Including its 12 superstores, Petmania has 16 stores across the country employing over 260 and is the nation's largest dog grooming business.

MANUALLY (WITHOUT PSO):

METEOR Score: 0.2645

Generated New Text:

The city of Bristol is getting ready for a day filled with activities that everyone in the family, including pets, can enjoy to celebrate the launch of a new store in its eastern region. Petland will officially open its new Bristol outlet on Saturday, 15 February, and everyone from families to pet owners in and around Bristol are invited to participate in the grand opening festivities.

The chain, which operates 15 megastores across the country, relocated from its previous base in the Bristol Shopping Centre to a unit just a few blocks away. According to the company, the new store has a completely "fresh look" and will offer brand new services to its UK customers for the first time.

The day of the grand opening will be chock-full of various activities where everyone can take part in. There will be special guests, a host of family-friendly activities, and even a 'Puppucino' corner and pet-friendly treats for four-legged attendees. Attendees can also look forward to dog grooming demonstrations and a chance at getting complimentary gift bags.

There will be face-painting and balloon animals for the kids, and those interested can attend expert talks that will provide an insight into the unique services that the store will continue to offer, including an exclusive walk-in microchipping service for new and rescue dogs. The Bristol Centre of Animal Welfare will also have its own special guests, offering pet owners and animal lovers the perfect opportunity to get to know the new store and its specialized sections.

"We

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Galway is in for a day of family friendly and pet friendly activities to celebrate the opening of a new store in the east of the city. Petmania will officially reveal its new Galway store on Saturday, 20 January with an open invite to families and pet owners in Galway and surrounding areas to join in with the celebrations on the opening day. The chain, which has 12 superstores nationwide, has moved from its previous location in Wellpark Retail Centre to a few hundred meters away to a different unit. Read more: Galway area frightened sick after 'suspicious' incident as gardai searching trio This new store has a whole "new look", the company said, and will host brand new services open for the first time to Irish customers. The pet experts will be marking the official opening with several special guests and family friendly activities for all family members to get involved in. 'Puppucinos' and pet-friendly 'pupcakes' can be enjoyed by pets in attendance, while dog grooming demos and complimentary goodie bags for some lucky customers will be available on the day. There will be face-painting for kids as well as balloon modelers creating some fun air-filled pets to take home. There will also be a number of expert talks where customers can get a glimpse of the unique services that will be offered at the store on an ongoing basis, including a walk-in microchipping event available to those with newly welcomed pups and rescue dogs in need of the service. Galway Cat Centre will have special guests and will be the perfect opportunity for pet-owners and animal fans to visit the new store and explore the specialised areas, as well as chatting to the talented team members on site about all things health and wellness. Speaking about the continued expansion of Petmania, Petmania's spokesperson Emily Miller, said: "We are delighted to announce the opening of our newly located and 'new look' store in Galway, and welcoming back through our doors our loyal customers and new pet-owners from the area." "We are so excited to welcome the community and their furry friends to their new one-stop-shop for all pet essentials." Including its 12 superstores, Petmania has 16 stores across the country employing over 260 and is the nation's largest dog grooming business.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=150, max\_words=200):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. The output should be between 150-200 words."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=300,

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

Temp: 0.66, Tokens: 278, METEOR: 0.2740

Temp: 0.82, Tokens: 242, METEOR: 0.2410

Temp: 0.79, Tokens: 251, METEOR: 0.2063

Temp: 0.64, Tokens: 217, METEOR: 0.1734

Temp: 0.58, Tokens: 193, METEOR: 0.1455

Temp: 0.90, Tokens: 210, METEOR: 0.1695

Temp: 0.70, Tokens: 285, METEOR: 0.2548

Temp: 0.76, Tokens: 230, METEOR: 0.2236

Temp: 0.53, Tokens: 251, METEOR: 0.2012

Temp: 0.50, Tokens: 178, METEOR: 0.1662

Temp: 0.88, Tokens: 175, METEOR: 0.1416

Temp: 0.74, Tokens: 268, METEOR: 0.2302

Temp: 0.80, Tokens: 219, METEOR: 0.1642

Temp: 0.64, Tokens: 223, METEOR: 0.1642

Temp: 0.54, Tokens: 170, METEOR: 0.1377

Temp: 0.72, Tokens: 157, METEOR: 0.1243

Temp: 0.76, Tokens: 242, METEOR: 0.2248

Temp: 0.81, Tokens: 212, METEOR: 0.1543

Temp: 0.71, Tokens: 187, METEOR: 0.1514

Temp: 0.62, Tokens: 161, METEOR: 0.1203

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.6248

Max Tokens: 161

METEOR Score: 0.1434

Generated Text:

The city of Liverpool is set to enjoy a day filled with fun and pet-friendly activities to commemorate the launch of a new shop in the western part of the city. PetWorld will officially inaugurate its latest Liverpool store on Sunday, 15th February, extending an open invitation to families and pet owners in Liverpool and the nearby regions to partake in the grand opening festivities. The brand, which operates 14 mega-stores across the country, has relocated from its former spot in the Parkside Shopping Centre to a nearby unit, just a few blocks away.

This new venue boasts a "fresh design," according to the company, and will introduce brand new services available for the first time to British customers. The pet specialists will be commemorating the grand opening with various special guests and family-oriented activities for

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Galway is in for a day of family friendly and pet friendly activities to celebrate the opening of a new store in the east of the city. Petmania will officially reveal its new Galway store on Saturday, 20 January with an open invite to families and pet owners in Galway and surrounding areas to join in with the celebrations on the opening day. The chain, which has 12 superstores nationwide, has moved from its previous location in Wellpark Retail Centre to a few hundred meters away to a different unit. Read more: Galway area frightened sick after 'suspicious' incident as gardai searching trio This new store has a whole "new look", the company said, and will host brand new services open for the first time to Irish customers. The pet experts will be marking the official opening with several special guests and family friendly activities for all family members to get involved in. 'Puppucinos' and pet-friendly 'pupcakes' can be enjoyed by pets in attendance, while dog grooming demos and complimentary goodie bags for some lucky customers will be available on the day. There will be face-painting for kids as well as balloon modelers creating some fun air-filled pets to take home. There will also be a number of expert talks where customers can get a glimpse of the unique services that will be offered at the store on an ongoing basis, including a walk-in microchipping event available to those with newly welcomed pups and rescue dogs in need of the service. Galway Cat Centre will have special guests and will be the perfect opportunity for pet-owners and animal fans to visit the new store and explore the specialised areas, as well as chatting to the talented team members on site about all things health and wellness. Speaking about the continued expansion of Petmania, Petmania's spokesperson Emily Miller, said: "We are delighted to announce the opening of our newly located and 'new look' store in Galway, and welcoming back through our doors our loyal customers and new pet-owners from the area." "We are so excited to welcome the community and their furry friends to their new one-stop-shop for all pet essentials." Including its 12 superstores, Petmania has 16 stores across the country employing over 260 and is the nation's largest dog grooming business.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=300):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure to complete all sentences."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=int(max\_tokens)

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {int(max\_tokens)}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters

lb = [0.5, 150]  # Lower bounds [temperature, max\_tokens] - increased min tokens to avoid cut-off sentences

ub = [1.0, 300]  # Upper bounds [temperature, max\_tokens] - reduced max tokens for shorter output

swarmsize = 5     # Keep original swarm size for better optimization

maxiter = 3       # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=int(best\_max\_tokens)

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {int(best\_max\_tokens)}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

The manual approach produced a detailed, creative translation of the pet store opening from Galway to Bristol, with a METEOR score of 0.2645, though it was cut off mid-sentence in the final quote. The PSO optimization found parameters (Temperature: 0.6248, Max Tokens: 161) that achieved a better METEOR score of 0.1434, indicating greater originality, but again experienced sentence truncation at the end despite our attempt to address this issue.

3)

SAMPLE:

As we navigate the summer holidays, we are giving readers the chance to win a whopping €200 to help with their school uniform shop. As children grow up to seven centimetres each year, they are often left with cropped blazers and shrunken sleeves by the time July rolls around. What’s more, uniforms are worn for around 195 days a year, so it’s no surprise that some items end up in tatters before the term is complete. However, the back-to-school shop can place financial strain on parents. In many cases, students are expected to have an average of three branded items of uniform, while around a third of secondary school pupils are required to own four to five branded items. To help ease the squeeze on your purse strings, we are giving one reader €200 towards the cost of school uniforms. This will be a payment made to their bank account so isn’t restricted to a particular brand. It's safe to say that €200 will go a long way in your next school shop, so what are you waiting for? You've got to be in it to win it! To take part in our competition, simply fill in your name and email address in the form below. Click HERE if you cannot view the entry form. The competition will close at midnight on Sunday, August 18 and the winner will be selected at random. Good luck!

MANUALLY (WITHOUT PSO):

METEOR Score: 0.1708

Generated New Text:

As the autumn chill sets in, we're offering readers a fantastic opportunity to win £150 to put towards their winter wardrobe. As seasons change, the weather becomes brisk and bare limbs are definitely out, having left sun-soaked days behind. Considering that winter attire needs to last for about 150 days every year, it's easy to understand why some sweaters or jackets might wear down before the season is through. The task of restocking your wardrobe every winter can be financially taxing. Many love to sport around three pieces of designer winter wear, while almost half of us aim for at least four or five premium items. To soften the blow on your own wallet, we're offering £150 to one lucky reader to refresh their winter attire. This prize will be directly transferred to the winner's bank account, and is not linked to any specific store or brand. There's no denying that £150 can add some pizzazz to your next winter shopping spree. Don't hesitate any longer! Remember,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

As we navigate the summer holidays, we are giving readers the chance to win a whopping €200 to help with their school uniform shop. As children grow up to seven centimetres each year, they are often left with cropped blazers and shrunken sleeves by the time July rolls around. What's more, uniforms are worn for around 195 days a year, so it's no surprise that some items end up in tatters before the term is complete. However, the back-to-school shop can place financial strain on parents. In many cases, students are expected to have an average of three branded items of uniform, while around a third of secondary school pupils are required to own four to five branded items. To help ease the squeeze on your purse strings, we are giving one reader €200 towards the cost of school uniforms. This will be a payment made to their bank account so isn't restricted to a particular brand. It's safe to say that €200 will go a long way in your next school shop, so what are you waiting for? You've got to be in it to win it! To take part in our competition, simply fill in your name and email address in the form below. Click HERE if you cannot view the entry form. The competition will close at midnight on Sunday, August 18 and the winner will be selected at random. Good luck!

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=100, max\_words=150):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be between 100-150 words."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=200,

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

Temp: 0.99, Tokens: 166, METEOR: 0.1701

Temp: 0.60, Tokens: 198, METEOR: 0.3014

Temp: 0.72, Tokens: 174, METEOR: 0.2222

Temp: 0.86, Tokens: 192, METEOR: 0.1891

Temp: 0.55, Tokens: 161, METEOR: 0.2722

Temp: 0.78, Tokens: 162, METEOR: 0.1784

Temp: 0.83, Tokens: 200, METEOR: 0.2658

Temp: 0.52, Tokens: 170, METEOR: 0.2124

Temp: 0.80, Tokens: 181, METEOR: 0.2294

Temp: 0.74, Tokens: 178, METEOR: 0.2116

Temp: 0.74, Tokens: 161, METEOR: 0.1853

Temp: 1.00, Tokens: 200, METEOR: 0.2199

Temp: 0.56, Tokens: 167, METEOR: 0.2024

Temp: 0.80, Tokens: 176, METEOR: 0.1546

Temp: 0.85, Tokens: 186, METEOR: 0.2130

Temp: 0.85, Tokens: 165, METEOR: 0.1708

Temp: 1.00, Tokens: 192, METEOR: 0.1787

Temp: 0.69, Tokens: 166, METEOR: 0.1668

Temp: 0.81, Tokens: 173, METEOR: 0.1807

Temp: 0.90, Tokens: 185, METEOR: 0.2557

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8043

Max Tokens: 176

METEOR Score: 0.2699

Generated Text:

As we sail through the festive season, we are offering readers the chance to win an impressive $250 to aid with their holiday shopping. Given the exchange of presents is a tradition during this period, the cost can accumulate swiftly. Add this to the fact that the holidays can last up to a week or more, depending on personal practices, it's not a shock that some budgets get blown out the window. However, the holiday shopping can put financial pressure on households. Often, family members are expected to give one another several gifts, making the total cost quite significant. To help lessen the impact on your wallet, we are offering one reader $250 towards the cost of their holiday shopping. This will be a direct deposit into their bank account, so it isn't limited to a specific store or brand. It's fair to say that $250 will make a considerable difference in your next

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

As we navigate the summer holidays, we are giving readers the chance to win a whopping €200 to help with their school uniform shop. As children grow up to seven centimetres each year, they are often left with cropped blazers and shrunken sleeves by the time July rolls around. What's more, uniforms are worn for around 195 days a year, so it's no surprise that some items end up in tatters before the term is complete. However, the back-to-school shop can place financial strain on parents. In many cases, students are expected to have an average of three branded items of uniform, while around a third of secondary school pupils are required to own four to five branded items. To help ease the squeeze on your purse strings, we are giving one reader €200 towards the cost of school uniforms. This will be a payment made to their bank account so isn't restricted to a particular brand. It's safe to say that €200 will go a long way in your next school shop, so what are you waiting for? You've got to be in it to win it! To take part in our competition, simply fill in your name and email address in the form below. Click HERE if you cannot view the entry form. The competition will close at midnight on Sunday, August 18 and the winner will be selected at random. Good luck!

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 100-150 words."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens is at least 150 to complete sentences

        tokens = max(150, int(max\_tokens))

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters - fixed lower bound for max\_tokens to avoid cut-offs

lb = [0.5, 150]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 200]    # Upper bounds [temperature, max\_tokens] - limiting to around 100-200 words

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Generate final text with optimized parameters - ensure at least 150 tokens

final\_max\_tokens = max(150, int(best\_max\_tokens))

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this third test with the school uniform competition sample, the manual approach created a creative parallel competition for winter wardrobe shopping with a METEOR score of 0.1708, maintaining the promotional structure while changing the context, though it was cut off at "Remember,". The PSO-optimized version found parameters (Temperature: 0.8043, Max Tokens: 176) but achieved a higher METEOR score of 0.2699 (less originality) and still ended mid-sentence with "difference in your next", indicating that despite our adjustments to the code, the sentence completion issue persists.

4)

SAMPLE:

A mum who alleges her GP dismissed her four-year-old daughter's symptoms as "faking it" just a week before she was diagnosed with blood cancer, is urging parents to trust their "instincts". UK mother Rebecca Herbert’s daughter Summer, now seven, was diagnosed with acute lymphoblastic leukaemia (ALL) in April 2022 after she was discovered lying on the floor in her bedroom, unable to walk or use her legs. Prior to this, Summer, from Hampshire, had been "constantly unwell" and bruising easily. However, when Rebecca, 33, took her to the GP, she claims the doctor told her Summer was "faking it" and advised her to "go home and dose her up on Calpol". Lawyers representing the GP expressed regret that Rebecca "felt her daughter’s symptoms were not treated seriously" and claimed they instructed her to take Summer for an X-ray at the nearest A&E department that evening as she couldn't bear weight on her right leg. Rebecca recounted that upon arriving at the nearest medical centre, she was informed that Summer wasn't scheduled for an X-ray. Undeterred, she took Summer to another hospital that same evening, where blood tests were conducted. A week later, following a referral to another hospital, the devastating news was confirmed: Summer, just four years old, had leukaemia. The ensuing two-plus years of chemotherapy were gruelling, causing Summer to lose her hair and miss out on school, swimming lessons, and socialising with friends. However, upon completing her treatment in June, Summer was celebrated with a party, where she was treated like "a proper princess". Looking back on the diagnosis that was almost overlooked, Rebecca is now urging other parents to trust their instincts. She said: “When I went to the doctors with her, they basically said that she was faking it. “They literally said, from their mouth, ‘She’s faking it’. I said: ‘Why would she fake it? It’s half-term.’ I’d understand if it was my son and he didn’t want to go to school, but this wasn’t the case. They said, ‘No, no, just go home and dose her up on Calpol’… I thought, ‘No, this isn’t right’.” She added: “Just always go for your mother instincts. You know when something’s wrong with your kids… and even if you’re not sure, go and get checked.” According to experts, symptoms of childhood acute lymphoblastic leukaemia (ALL) can include breathlessness, looking pale, picking up infections easily and bruising or bleeding easily. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our community, you can check out any time you like. If you’re curious, you can read our Privacy Notice.

MANUALLY (WITHOUT PSO):

METEOR Score: 0.1157

Generated New Text:

A father, John Anders, has made a plea to parents to always second-guess professional opinions when it comes to their children's health after his two-year-old son, Oliver was misdiagnosed as "attention-seeking", only to be later confirmed to have Type 1 Diabetes. The little boy from Manchester, who had been excessively thirsty and frequently urinating, was initially dismissed by a health visitor advising John to simply reduce Oliver's juice intake. However, when the symptoms persisted, John decided to seek a second opinion and rushed Oliver to a local hospital. There, tests revealed that Oliver's blood sugar levels were dangerously high. He was airlifted to another medical facility where he was officially diagnosed as a Type 1 Diabetic. Reflecting on the harrowing suite of events, John urges other parents not to dismiss their gut feeling. He commented, "When a health professional brushed off my concerns, I was taken aback. They told me he was seeking attention, but that didn't sit right with me at all." He urged, "Always be alert for red flags when your children act out of the norm. If you have the slightest doubt, seek medical advice right away." Paediatric diabetes symptoms can include excessive thirst and frequent

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A mum who alleges her GP dismissed her four-year-old daughter's symptoms as "faking it" just a week before she was diagnosed with blood cancer, is urging parents to trust their "instincts". UK mother Rebecca Herbert's daughter Summer, now seven, was diagnosed with acute lymphoblastic leukaemia (ALL) in April 2022 after she was discovered lying on the floor in her bedroom, unable to walk or use her legs. Prior to this, Summer, from Hampshire, had been "constantly unwell" and bruising easily. However, when Rebecca, 33, took her to the GP, she claims the doctor told her Summer was "faking it" and advised her to "go home and dose her up on Calpol". Lawyers representing the GP expressed regret that Rebecca "felt her daughter's symptoms were not treated seriously" and claimed they instructed her to take Summer for an X-ray at the nearest A&E department that evening as she couldn't bear weight on her right leg. Rebecca recounted that upon arriving at the nearest medical centre, she was informed that Summer wasn't scheduled for an X-ray. Undeterred, she took Summer to another hospital that same evening, where blood tests were conducted. A week later, following a referral to another hospital, the devastating news was confirmed: Summer, just four years old, had leukaemia. The ensuing two-plus years of chemotherapy were gruelling, causing Summer to lose her hair and miss out on school, swimming lessons, and socialising with friends. However, upon completing her treatment in June, Summer was celebrated with a party, where she was treated like "a proper princess". Looking back on the diagnosis that was almost overlooked, Rebecca is now urging other parents to trust their instincts. She said: "When I went to the doctors with her, they basically said that she was faking it. "They literally said, from their mouth, 'She's faking it'. I said: 'Why would she fake it? It's half-term.' I'd understand if it was my son and he didn't want to go to school, but this wasn't the case. They said, 'No, no, just go home and dose her up on Calpol'… I thought, 'No, this isn't right'." She added: "Just always go for your mother instincts. You know when something's wrong with your kids… and even if you're not sure, go and get checked." According to experts, symptoms of childhood acute lymphoblastic leukaemia (ALL) can include breathlessness, looking pale, picking up infections easily and bruising or bleeding easily. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=100, max\_words=150):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be between 100-150 words."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=250,  # Increased to ensure complete sentences

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

Starting PSO optimization...

Temp: 0.94, Tokens: 230, METEOR: 0.1145

Temp: 0.86, Tokens: 239, METEOR: 0.0993

Temp: 0.95, Tokens: 233, METEOR: 0.1259

Temp: 0.74, Tokens: 213, METEOR: 0.0960

Temp: 0.70, Tokens: 240, METEOR: 0.1218

Temp: 0.99, Tokens: 248, METEOR: 0.1434

Temp: 0.70, Tokens: 209, METEOR: 0.1152

Temp: 1.00, Tokens: 216, METEOR: 0.0802

Temp: 0.94, Tokens: 219, METEOR: 0.1110

Temp: 0.70, Tokens: 224, METEOR: 0.1219

Temp: 0.99, Tokens: 248, METEOR: 0.1070

Temp: 0.73, Tokens: 207, METEOR: 0.1109

Temp: 1.00, Tokens: 208, METEOR: 0.1094

Temp: 1.00, Tokens: 220, METEOR: 0.0960

Temp: 0.73, Tokens: 220, METEOR: 0.1428

Temp: 1.00, Tokens: 238, METEOR: 0.1037

Temp: 0.80, Tokens: 210, METEOR: 0.1053

Temp: 1.00, Tokens: 208, METEOR: 0.1154

Temp: 1.00, Tokens: 219, METEOR: 0.0991

Temp: 0.82, Tokens: 217, METEOR: 0.1335

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 216

METEOR Score: 0.1091

Generated Text:

A father, who claims his teenage son's complaints were brushed off as "teenage moodiness" before he was eventually diagnosed with severe depression, is encouraging parents to take their children's emotional health seriously. Edward Hawkins, a single father in the US, became increasingly concerned about the emotional health of his 16-year-old son, William, when he started isolating himself and became less interested in activities he used to enjoy. Despite Edward sharing his concerns with a family physician, he was advised to consider it normal teenage mood swings. Lawyers representing the physician shared that Edward was advised to seek therapy if symptoms persisted. However, months later when William had a severe depressive episode, Edward took his son to a different medical facility. Eventually, William was diagnosed with major depressive disorder. The following months involved intense counseling sessions, group therapy, and medication which heavily disrupted his routine making him miss school and time with friends. However, upon completing the first intensive phase of his treatment in September, a small gathering was held to celebrate "his fight". Reflecting on how his son's plight was dismissed

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A mum who alleges her GP dismissed her four-year-old daughter's symptoms as "faking it" just a week before she was diagnosed with blood cancer, is urging parents to trust their "instincts". UK mother Rebecca Herbert's daughter Summer, now seven, was diagnosed with acute lymphoblastic leukaemia (ALL) in April 2022 after she was discovered lying on the floor in her bedroom, unable to walk or use her legs. Prior to this, Summer, from Hampshire, had been "constantly unwell" and bruising easily. However, when Rebecca, 33, took her to the GP, she claims the doctor told her Summer was "faking it" and advised her to "go home and dose her up on Calpol". Lawyers representing the GP expressed regret that Rebecca "felt her daughter's symptoms were not treated seriously" and claimed they instructed her to take Summer for an X-ray at the nearest A&E department that evening as she couldn't bear weight on her right leg. Rebecca recounted that upon arriving at the nearest medical centre, she was informed that Summer wasn't scheduled for an X-ray. Undeterred, she took Summer to another hospital that same evening, where blood tests were conducted. A week later, following a referral to another hospital, the devastating news was confirmed: Summer, just four years old, had leukaemia. The ensuing two-plus years of chemotherapy were gruelling, causing Summer to lose her hair and miss out on school, swimming lessons, and socialising with friends. However, upon completing her treatment in June, Summer was celebrated with a party, where she was treated like "a proper princess". Looking back on the diagnosis that was almost overlooked, Rebecca is now urging other parents to trust their instincts. She said: "When I went to the doctors with her, they basically said that she was faking it. "They literally said, from their mouth, 'She's faking it'. I said: 'Why would she fake it? It's half-term.' I'd understand if it was my son and he didn't want to go to school, but this wasn't the case. They said, 'No, no, just go home and dose her up on Calpol'… I thought, 'No, this isn't right'." She added: "Just always go for your mother instincts. You know when something's wrong with your kids… and even if you're not sure, go and get checked." According to experts, symptoms of childhood acute lymphoblastic leukaemia (ALL) can include breathlessness, looking pale, picking up infections easily and bruising or bleeding easily. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=200):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 100-120 words."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens is at least 200 to complete sentences

        tokens = max(200, int(max\_tokens))

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters - fixed higher lower bound for max\_tokens to avoid cut-offs

lb = [0.7, 200]    # Lower bounds [temperature, max\_tokens] - increased to ensure complete sentences

ub = [1.0, 250]    # Upper bounds [temperature, max\_tokens]

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Generate final text with optimized parameters - ensure at least 200 tokens

final\_max\_tokens = max(200, int(best\_max\_tokens))

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this fourth test with the medical story sample, both approaches created parallel narratives about misdiagnosed conditions while maintaining excellent originality. The manual approach achieved an impressive METEOR score of 0.1157 with a story about Type 1 Diabetes misdiagnosed as "attention-seeking," though it was cut off at "excessive thirst and frequent." The PSO-optimized version found optimal parameters (Temperature: 1.0000, Max Tokens: 216) and achieved a competitive METEOR score of 0.1091, replacing blood cancer with depression, but still ended with a sentence cut-off at "Reflecting on how his son's plight was dismissed."

5)

SAMPLE:

Residents are being advised to keep their windows firmly shut "at all times" day and night as of this week. If you've observed an uptick in the number of flies buzzing around your home during the recent spell of fine weather, you're not alone. While the infestation may have subsided with the cooling temperatures, this week is anticipated to bring a return to warmer climes. Fortunately, there's a trick to dodging these pesky fly encounters – simply keep your widows and doors closed at all times, whether it's during the daylight hours or after dark. Because flies are so diminutive, they can slip through the smallest of openings, such as slightly ajar doors and windows, making them tricky to nab, especially when compared to other critters like spiders or silverfish. The most effective method to keep the fly population in your home at bay is to prevent them from entering altogether. But don't fret if you think you're past the point of no entry, or if the flies' infiltration routes baffle you; there's a slew of straightforward and affordable ways to banish them.

MANUALLY (WITHOUT PSO):

METEOR Score: 0.1753

Generated New Text:

Pet owners, be prepared to keep your cats and dogs indoors "at all times" as we move into Easter holidays. You might have noticed an unexpected increase in traffic accidents involving pets during the holiday season of yesteryears. Unbeknownst to many, the holiday hustle and bustle can lead to upset traffic patterns, making roads riskier territories for our furry friends. This year, it’s expected for traffic to once again gear up around Easter. Don’t fret, as you can keep your pet safe from these hazards by simply keeping them indoors, whether during the day or at night. Even small gaps like slightly open gates can be an escape route. Compared to larger animals such as deers, pets can slip through unnoticed and get lost

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Residents are being advised to keep their windows firmly shut "at all times" day and night as of this week. If you've observed an uptick in the number of flies buzzing around your home during the recent spell of fine weather, you're not alone. While the infestation may have subsided with the cooling temperatures, this week is anticipated to bring a return to warmer climes. Fortunately, there's a trick to dodging these pesky fly encounters – simply keep your widows and doors closed at all times, whether it's during the daylight hours or after dark. Because flies are so diminutive, they can slip through the smallest of openings, such as slightly ajar doors and windows, making them tricky to nab, especially when compared to other critters like spiders or silverfish. The most effective method to keep the fly population in your home at bay is to prevent them from entering altogether. But don't fret if you think you're past the point of no entry, or if the flies' infiltration routes baffle you; there's a slew of straightforward and affordable ways to banish them.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

Starting PSO optimization...

Temp: 0.80, Tokens: 105, METEOR: 0.1123

Temp: 0.75, Tokens: 127, METEOR: 0.2338

Temp: 0.85, Tokens: 104, METEOR: 0.1939

Temp: 0.76, Tokens: 123, METEOR: 0.2392

Temp: 0.95, Tokens: 103, METEOR: 0.1994

Temp: 0.70, Tokens: 100, METEOR: 0.1618

Temp: 0.72, Tokens: 120, METEOR: 0.2067

Temp: 0.72, Tokens: 100, METEOR: 0.1503

Temp: 0.72, Tokens: 139, METEOR: 0.2518

Temp: 1.00, Tokens: 121, METEOR: 0.2046

Temp: 0.70, Tokens: 100, METEOR: 0.2096

Temp: 0.72, Tokens: 113, METEOR: 0.2414

Temp: 0.70, Tokens: 100, METEOR: 0.1935

Temp: 0.73, Tokens: 146, METEOR: 0.2604

Temp: 0.99, Tokens: 124, METEOR: 0.1286

Temp: 0.76, Tokens: 100, METEOR: 0.1574

Temp: 0.72, Tokens: 110, METEOR: 0.1450

Temp: 0.73, Tokens: 100, METEOR: 0.1472

Temp: 0.77, Tokens: 130, METEOR: 0.1845

Temp: 0.97, Tokens: 125, METEOR: 0.2234

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8036

Max Tokens: 105

METEOR Score: 0.1632

Generated Text:

Folks around the area are being encouraged to keep their homes sealed up "around the clock" starting this week. Noticed a noticeable increase in the presence of mosquitoes hovering around your living space during the recent burst of warm weather? You're in the same boat with many others. The swarm may have decreased with the drop in temperature, but the coming week is predicted to usher in a spell of heat. Thankfully, there's a simple strategy to avoid unpleasant mosquito encounters - simply keep your doors and windows sealed, day or night

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Residents are being advised to keep their windows firmly shut "at all times" day and night as of this week. If you've observed an uptick in the number of flies buzzing around your home during the recent spell of fine weather, you're not alone. While the infestation may have subsided with the cooling temperatures, this week is anticipated to bring a return to warmer climes. Fortunately, there's a trick to dodging these pesky fly encounters – simply keep your widows and doors closed at all times, whether it's during the daylight hours or after dark. Because flies are so diminutive, they can slip through the smallest of openings, such as slightly ajar doors and windows, making them tricky to nab, especially when compared to other critters like spiders or silverfish. The most effective method to keep the fly population in your home at bay is to prevent them from entering altogether. But don't fret if you think you're past the point of no entry, or if the flies' infiltration routes baffle you; there's a slew of straightforward and affordable ways to banish them.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this fifth test with the fly infestation sample, our token reduction strategy worked well. The manual approach created a creative parallel warning about pet safety during Easter with a METEOR score of 0.1753, though it still ended mid-sentence with "and get lost". The PSO-optimized version found parameters (Temperature: 0.8036, Max Tokens: 105) and achieved a better METEOR score of 0.1632, replacing flies with mosquitoes, but similarly ended prematurely with "day or night". Both approaches successfully kept token usage much lower (105-150 range) as requested, demonstrating that we can balance cost efficiency with creativity, though complete sentences remain challenging.

6)

SAMPLE:

A study highlighting Ireland's best hidden gems has included two Co Galway beauties among its incredible list. The off-the-beaten path guide uncovers some of the country's most picturesque and lesser-known destinations; those that are least documented on social media, that are perfect for a memorable visit. The study by Polestar, a Swedish performance electric vehicle brand, reveals that Diamond Hill and Burren Nature Sanctuary are among Ireland's most underrated and secret attractions. Read more: Three Galway restaurants up for best Ireland food awards face stiff competition The study harnessed data from TripAdvisor, Instagram and TikTok to reveal top-rated locations for every county in Ireland to see how popular they were. Diamond Hill is a stunning and isolated peak overlooking the village of Letterfrack, in the northwest corner of the Twelve Bens in Connemara National Park. Diamond Hill is one of the most amazing places in Connemara and one of the most popular destinations for a hike in the middle of nature, however that doesn't mean everyone agrees. One user on TripAdvisor wrote that “There was nothing to inspire or enjoy”. Yes, clearly nothing to enjoy here. Another wrote: “Was massively excited to experience such a landscape only to find it was mainly covered in paths”. Not sure what the correlation between the landscape and the path to reach the summit is. They are right, this path is ruining everything. To each their own.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1665

Generated New Text:

An exploration into Italy's uncharted treasures has flagged two delights in Sardinia amongst its list. The sightseer's guide digs up the nation's most scenic and less-traveled tourists spots; locations least visible on social media, ideal for unforgettable visits. The exploration by Aurora, an Italian electric vehicle brand, reveals that Capo Testa and Neptune's Grotto are amid Italy's least recognized and secret attractions. It was quite fascinating deciphering details from TripAdvisor, Instagram, and TikTok to discover top-rated sites for every district in Italy regarding their popularity. Capo Testa, a spectacular isolated promontory adjacent to the town of Santa Teresa Gallura, in the northernmost tip of Sardinia, is guaranteed to leave

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A study highlighting Ireland's best hidden gems has included two Co Galway beauties among its incredible list. The off-the-beaten path guide uncovers some of the country's most picturesque and lesser-known destinations; those that are least documented on social media, that are perfect for a memorable visit. The study by Polestar, a Swedish performance electric vehicle brand, reveals that Diamond Hill and Burren Nature Sanctuary are among Ireland's most underrated and secret attractions. Read more: Three Galway restaurants up for best Ireland food awards face stiff competition The study harnessed data from TripAdvisor, Instagram and TikTok to reveal top-rated locations for every county in Ireland to see how popular they were. Diamond Hill is a stunning and isolated peak overlooking the village of Letterfrack, in the northwest corner of the Twelve Bens in Connemara National Park. Diamond Hill is one of the most amazing places in Connemara and one of the most popular destinations for a hike in the middle of nature, however that doesn't mean everyone agrees. One user on TripAdvisor wrote that "There was nothing to inspire or enjoy". Yes, clearly nothing to enjoy here. Another wrote: "Was massively excited to experience such a landscape only to find it was mainly covered in paths". Not sure what the correlation between the landscape and the path to reach the summit is. They are right, this path is ruining everything. To each their own.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.84, Tokens: 101, METEOR: 0.0915

Temp: 0.75, Tokens: 126, METEOR: 0.1583

Temp: 0.74, Tokens: 101, METEOR: 0.1136

Temp: 0.81, Tokens: 101, METEOR: 0.0849

Temp: 0.98, Tokens: 147, METEOR: 0.1348

Temp: 0.86, Tokens: 100, METEOR: 0.0896

Temp: 0.70, Tokens: 117, METEOR: 0.1508

Temp: 0.70, Tokens: 100, METEOR: 0.1074

Temp: 0.82, Tokens: 100, METEOR: 0.0935

Temp: 0.92, Tokens: 150, METEOR: 0.1646

Temp: 0.85, Tokens: 100, METEOR: 0.1073

Temp: 0.70, Tokens: 109, METEOR: 0.1215

Temp: 0.72, Tokens: 100, METEOR: 0.0983

Temp: 0.81, Tokens: 100, METEOR: 0.1273

Temp: 0.89, Tokens: 142, METEOR: 0.1568

Temp: 0.84, Tokens: 100, METEOR: 0.1134

Temp: 0.72, Tokens: 102, METEOR: 0.1228

Temp: 0.77, Tokens: 100, METEOR: 0.0872

Temp: 0.81, Tokens: 100, METEOR: 0.0936

Temp: 0.87, Tokens: 126, METEOR: 0.0980

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8112

Max Tokens: 101

METEOR Score: 0.1348

Generated Text:

A report spotlighting Scotland's best kept secrets has featured two Perthshire treasures in its extraordinary findings. The offbeat guide unveils some of the nation's most scenic and less explored locations; those that are scarcely highlighted on social media, yet ideal for a unique adventure. The report by Polestar, a Scandinavian electric vehicle company, uncovers that the Enchanted Forest and Explorers' Garden are among Scotland's most underappreciated and concealed wonders. The report utilized insights from TripAdvisor, Instagram

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A study highlighting Ireland's best hidden gems has included two Co Galway beauties among its incredible list. The off-the-beaten path guide uncovers some of the country's most picturesque and lesser-known destinations; those that are least documented on social media, that are perfect for a memorable visit. The study by Polestar, a Swedish performance electric vehicle brand, reveals that Diamond Hill and Burren Nature Sanctuary are among Ireland's most underrated and secret attractions. Read more: Three Galway restaurants up for best Ireland food awards face stiff competition The study harnessed data from TripAdvisor, Instagram and TikTok to reveal top-rated locations for every county in Ireland to see how popular they were. Diamond Hill is a stunning and isolated peak overlooking the village of Letterfrack, in the northwest corner of the Twelve Bens in Connemara National Park. Diamond Hill is one of the most amazing places in Connemara and one of the most popular destinations for a hike in the middle of nature, however that doesn't mean everyone agrees. One user on TripAdvisor wrote that "There was nothing to inspire or enjoy". Yes, clearly nothing to enjoy here. Another wrote: "Was massively excited to experience such a landscape only to find it was mainly covered in paths". Not sure what the correlation between the landscape and the path to reach the summit is. They are right, this path is ruining everything. To each their own.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this sixth test with the hidden gems sample, both approaches successfully created parallel travel articles with good originality, though sentence completeness remains an issue. The manual approach achieved a METEOR score of 0.1665, transposing Irish locations to Italian ones (Sardinia) with creative replacements like "Aurora" for "Polestar," but was cut off at "guaranteed to leave". The PSO-optimized version found parameters (Temperature: 0.8112, Max Tokens: 101) and achieved a better METEOR score of 0.1348, relocating to Scotland and Perthshire, but similarly ended mid-sentence at "Instagram". Despite our token limitations, both methods produced highly original content.

7)

SAMPLE:

A Galway student whose mum passed away from cancer is set to pay tribute to her by running a marathon in aid of a cause close to her heart. Layla Killeen, a 21 year old final year law student in the University of Galway, is undertaking the huge task of running in the Dublin City Marathon to raise funds for the Irish Cancer Society. "Around two years ago, my mum, Sonia, was diagnosed with stage 4 cancer, and she passed away six months after this diagnosis," Layla explained. "Mum's illness was brief, but it was painful for all of us. She was such a bright light in all of our lives, and it was so devastating to watch her go through treatment and get sicker all the time." "I went on Erasmus in France, and I took up running while I was there. It was such a great way for me to clear my head and process my grief. I ran the Nice half Marathon while I was there. I've raised nearly €3,000 so far, and I'm hoping to reach €5,000 by the time I'm done," she said. With over a month to go until the marathon on 27 October, reaching 60% of the target already is inciredibly impressive.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1661

Generated New Text:

A London scholar, whose father succumbed to Alzheimer's, is planning to pay homage to him by cycling across the country in support of a cause that was close to his heart. Darren Lindsey, a 23 year old doctoral candidate at King's College London, is faced with the massive challenge of partaking in the End to End cycle race to gather donations for Alzheimer's Society UK. "Just about three years back, my dad, George, was diagnosed with severe Alzheimer's and he left us a year after this diagnosis," Darren narrated. "Dad's affliction was rapid, but it was agonizing for the entire family. He was a beacon of wisdom for us all, and it broke our hearts to witness his decline and increasing confusion

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A Galway student whose mum passed away from cancer is set to pay tribute to her by running a marathon in aid of a cause close to her heart. Layla Killeen, a 21 year old final year law student in the University of Galway, is undertaking the huge task of running in the Dublin City Marathon to raise funds for the Irish Cancer Society. "Around two years ago, my mum, Sonia, was diagnosed with stage 4 cancer, and she passed away six months after this diagnosis," Layla explained. "Mum's illness was brief, but it was painful for all of us. She was such a bright light in all of our lives, and it was so devastating to watch her go through treatment and get sicker all the time." "I went on Erasmus in France, and I took up running while I was there. It was such a great way for me to clear my head and process my grief. I ran the Nice half Marathon while I was there. I've raised nearly €3,000 so far, and I'm hoping to reach €5,000 by the time I'm done," she said. With over a month to go until the marathon on 27 October, reaching 60% of the target already is inciredibly impressive.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.78, Tokens: 128, METEOR: 0.0859

Temp: 0.89, Tokens: 129, METEOR: 0.1308

Temp: 0.85, Tokens: 125, METEOR: 0.1490

Temp: 0.91, Tokens: 125, METEOR: 0.1445

Temp: 0.81, Tokens: 121, METEOR: 0.1183

Temp: 0.71, Tokens: 109, METEOR: 0.1301

Temp: 1.00, Tokens: 105, METEOR: 0.0996

Temp: 0.74, Tokens: 148, METEOR: 0.1770

Temp: 0.98, Tokens: 113, METEOR: 0.1593

Temp: 0.78, Tokens: 132, METEOR: 0.1207

Temp: 0.74, Tokens: 115, METEOR: 0.1132

Temp: 1.00, Tokens: 103, METEOR: 0.0838

Temp: 0.77, Tokens: 143, METEOR: 0.1439

Temp: 1.00, Tokens: 108, METEOR: 0.1009

Temp: 0.85, Tokens: 127, METEOR: 0.1084

Temp: 0.77, Tokens: 117, METEOR: 0.1618

Temp: 1.00, Tokens: 101, METEOR: 0.0715

Temp: 0.80, Tokens: 129, METEOR: 0.1527

Temp: 1.00, Tokens: 103, METEOR: 0.0839

Temp: 0.94, Tokens: 115, METEOR: 0.0987

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 101

METEOR Score: 0.0739

Generated Text:

A Melbourne accountant whose father succumbed to heart disease is preparing to honour his memory by cycling across Australia for a charity aligned with his father's battle. Caleb Anderson, a 28 year old dedicated professional, is readying himself to accomplish the monumental challenge of circumnavigating Australia on bike to generate donations for the Australian Heart Foundation. "Two years past, my father, Pete, fought a prolonged battle with terminal heart disease and his fight ended eight months later," Caleb shared. "The swiftn

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A Galway student whose mum passed away from cancer is set to pay tribute to her by running a marathon in aid of a cause close to her heart. Layla Killeen, a 21 year old final year law student in the University of Galway, is undertaking the huge task of running in the Dublin City Marathon to raise funds for the Irish Cancer Society. "Around two years ago, my mum, Sonia, was diagnosed with stage 4 cancer, and she passed away six months after this diagnosis," Layla explained. "Mum's illness was brief, but it was painful for all of us. She was such a bright light in all of our lives, and it was so devastating to watch her go through treatment and get sicker all the time." "I went on Erasmus in France, and I took up running while I was there. It was such a great way for me to clear my head and process my grief. I ran the Nice half Marathon while I was there. I've raised nearly €3,000 so far, and I'm hoping to reach €5,000 by the time I'm done," she said. With over a month to go until the marathon on 27 October, reaching 60% of the target already is inciredibly impressive.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this seventh test with the marathon fundraising story, both methods created emotionally resonant parallels with excellent originality. The manual approach achieved a METEOR score of 0.1661, transforming the story to a London doctoral student cycling for Alzheimer's in memory of his father, but was cut off at "increasing confusion". The PSO-optimized version found parameters (Temperature: 1.0000, Max Tokens: 101) and achieved an exceptional METEOR score of 0.0739 (demonstrating very high originality), reimagining the story with an Australian accountant cycling across the continent for heart disease charity, though it was also cut off at "The swiftn". Both versions maintained the emotional tone while completely changing characters and contexts.

8)

SAMPLE:

The Minister for Social Protection has confirmed that parents will be fairly paid a new payment announced in the Budget after members of the public worried they might be excluded due to a technicality. The so-called 'baby boost' payment was confirmed during Tuesday's Budget and will grant a triple child benefit payment to new parents. From 2025, parents will receive a one-off €420 payment as well as increases to maternity and paternity leave benefits. Concerns had been raised that the parents of babies born in December 2024 would miss out on the payment due to their child being born just a few weeks before the measure came into effect. This would have hypothetically also meant that they would have missed out on the two double Child Benefit payments due to be issued to all parents in November and December, if the child was their firstborn. However, Social Protection Minister Heather Humphreys said that after being contacted by expectant mothers with due dates in December and working with Government colleagues, the payment would in fact now be paid out for these women. It's understood that they would receive the payment alongside their January Child Benefit payment.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1647

Generated New Text:

The Secretary of State for Health and Social Care has assured that the elderly will be in line for a new health benefit announced in the latest fiscal proposals, following public anxiety regarding potential omission due to administrative details. The so-called 'senior supplement' scheme was announced during Monday's Budget release and will afford an augmented pension payment to those entering retirement. Starting in 2030, retirees will be granted a one-time £300 supplement and additions to healthcare funding. It was apprehensively speculated that individuals retiring in December 2029 would miss the supplement, as their retirement would initiate just prior to the scheme's enforcement. This could have potentially bypassed them from the two planned pension increase instalments set for November and December, particularly for those recently entering their retirement

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

The Minister for Social Protection has confirmed that parents will be fairly paid a new payment announced in the Budget after members of the public worried they might be excluded due to a technicality. The so-called 'baby boost' payment was confirmed during Tuesday's Budget and will grant a triple child benefit payment to new parents. From 2025, parents will receive a one-off €420 payment as well as increases to maternity and paternity leave benefits. Concerns had been raised that the parents of babies born in December 2024 would miss out on the payment due to their child being born just a few weeks before the measure came into effect. This would have hypothetically also meant that they would have missed out on the two double Child Benefit payments due to be issued to all parents in November and December, if the child was their firstborn. However, Social Protection Minister Heather Humphreys said that after being contacted by expectant mothers with due dates in December and working with Government colleagues, the payment would in fact now be paid out for these women. It's understood that they would receive the payment alongside their January Child Benefit payment.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.75, Tokens: 145, METEOR: 0.2634

Temp: 0.81, Tokens: 117, METEOR: 0.1639

Temp: 0.96, Tokens: 101, METEOR: 0.1427

Temp: 0.93, Tokens: 110, METEOR: 0.1139

Temp: 0.83, Tokens: 107, METEOR: 0.1529

Temp: 0.79, Tokens: 118, METEOR: 0.1758

Temp: 0.73, Tokens: 108, METEOR: 0.1433

Temp: 0.99, Tokens: 100, METEOR: 0.1657

Temp: 0.89, Tokens: 100, METEOR: 0.1302

Temp: 0.93, Tokens: 100, METEOR: 0.1224

Temp: 0.86, Tokens: 103, METEOR: 0.1543

Temp: 0.76, Tokens: 104, METEOR: 0.1705

Temp: 0.99, Tokens: 102, METEOR: 0.1089

Temp: 0.90, Tokens: 100, METEOR: 0.1633

Temp: 0.99, Tokens: 100, METEOR: 0.0979

Temp: 0.94, Tokens: 100, METEOR: 0.1063

Temp: 0.78, Tokens: 102, METEOR: 0.1383

Temp: 0.99, Tokens: 103, METEOR: 0.1274

Temp: 0.94, Tokens: 104, METEOR: 0.1876

Temp: 1.00, Tokens: 100, METEOR: 0.1008

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9865

Max Tokens: 100

METEOR Score: 0.1249

Generated Text:

The Health and Welfare Secretary has assured citizens that seniors will receive the proposed pension increase announced in the parliamentary session, after concerns were raised about them being overlooked due to complex regulations. This new 'pension surge' was disclosed during Monday's session and will provide a substantial pension increase for retirees starting 2030. From that year, seniors will receive a £500 one-time payment along with a rise in their monthly pension. Fears had been aired that those who retired in late 2029 might not

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

The Minister for Social Protection has confirmed that parents will be fairly paid a new payment announced in the Budget after members of the public worried they might be excluded due to a technicality. The so-called 'baby boost' payment was confirmed during Tuesday's Budget and will grant a triple child benefit payment to new parents. From 2025, parents will receive a one-off €420 payment as well as increases to maternity and paternity leave benefits. Concerns had been raised that the parents of babies born in December 2024 would miss out on the payment due to their child being born just a few weeks before the measure came into effect. This would have hypothetically also meant that they would have missed out on the two double Child Benefit payments due to be issued to all parents in November and December, if the child was their firstborn. However, Social Protection Minister Heather Humphreys said that after being contacted by expectant mothers with due dates in December and working with Government colleagues, the payment would in fact now be paid out for these women. It's understood that they would receive the payment alongside their January Child Benefit payment.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this eighth test with the "baby boost" policy story, both approaches effectively translated the content from child benefits to senior pensions while maintaining the formal government announcement style. The manual approach achieved a METEOR score of 0.1647, transforming the story to a "senior supplement" for retirees in the UK, but was cut off at "recently entering their retirement". The PSO-optimized version found parameters (Temperature: 0.9865, Max Tokens: 100) and achieved a better METEOR score of 0.1249, similarly reimagining the story with pension increases for seniors, but was also cut off mid-sentence at "those who retired in late 2029 might not". Both versions successfully maintained the formal bureaucratic tone while completely changing the target demographic and benefits.

9)

SAMPLE:

Galway's Westside is set to host "enchanting festive light show" this season that will be sure to light up any child (or adult's) face with a smile. Galway City Council, in association with Winterglow.ie, will present an illumination garden in Fr Burke Park from 21 November to 5 January 2025. This winter spectacle will transform the park into an awe-inspiring realm of lights and sounds where visitors can stroll through uniquely themed zones, each offering its own captivating visual and auditory delights. The festive event is fully accessible and will be open from Thursdays to Sundays from 4pm to 10pm. Organisers have invited the public "to step into a magical wonderland filled with dazzling Light Up UV animals in a vibrant, glowing setting". Families can meander through a garden of gigantic flowers and UV plants, creating lifelong memories together in this colourful winter paradise.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.3319

Generated New Text:

Cardiff's historic Bute Park is gearing up to host a "mesmerizing winter lights festival" this season that will undoubtedly bring sparkling joy to adults and children alike. The Cardiff City Council, in partnership with WinterWonder.co.uk, plans to unveil a luminous wonderland at Bute Park from 15th December to 30th January 2026. This fascinating extravaganza will turn the park into an amazing universe of lights and sounds where guests can wander through various uniquely themed areas, each providing its engaging visual and auditory marvels. The festive occasion is universally accessible and will be open from Fridays to Mondays from 6pm till midnight. Organisers encourage everyone "to enter a magical universe populated with glowing mythical creatures in a vivid

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Galway's Westside is set to host "enchanting festive light show" this season that will be sure to light up any child (or adult's) face with a smile. Galway City Council, in association with Winterglow.ie, will present an illumination garden in Fr Burke Park from 21 November to 5 January 2025. This winter spectacle will transform the park into an awe-inspiring realm of lights and sounds where visitors can stroll through uniquely themed zones, each offering its own captivating visual and auditory delights. The festive event is fully accessible and will be open from Thursdays to Sundays from 4pm to 10pm. Organisers have invited the public "to step into a magical wonderland filled with dazzling Light Up UV animals in a vibrant, glowing setting". Families can meander through a garden of gigantic flowers and UV plants, creating lifelong memories together in this colourful winter paradise.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.85, Tokens: 132, METEOR: 0.2187

Temp: 0.76, Tokens: 138, METEOR: 0.2584

Temp: 0.84, Tokens: 133, METEOR: 0.2308

Temp: 0.91, Tokens: 149, METEOR: 0.2115

Temp: 0.90, Tokens: 143, METEOR: 0.2965

Temp: 0.87, Tokens: 119, METEOR: 0.2568

Temp: 0.86, Tokens: 124, METEOR: 0.2572

Temp: 0.71, Tokens: 150, METEOR: 0.3203

Temp: 0.98, Tokens: 127, METEOR: 0.2563

Temp: 0.87, Tokens: 150, METEOR: 0.3254

Temp: 0.90, Tokens: 129, METEOR: 0.2500

Temp: 0.93, Tokens: 125, METEOR: 0.2214

Temp: 0.73, Tokens: 150, METEOR: 0.3462

Temp: 0.99, Tokens: 127, METEOR: 0.1723

Temp: 0.89, Tokens: 142, METEOR: 0.2768

Temp: 0.92, Tokens: 134, METEOR: 0.2568

Temp: 0.97, Tokens: 127, METEOR: 0.2904

Temp: 0.89, Tokens: 144, METEOR: 0.2798

Temp: 0.99, Tokens: 128, METEOR: 0.2413

Temp: 0.93, Tokens: 135, METEOR: 0.2975

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9890

Max Tokens: 127

METEOR Score: 0.1999

Generated Text:

Immerse yourself in the enchanting "Luminary Festival" this summer at Dublin's Gardiner Street Park, orchestrated by the Dublin City Council and Luminicious.ie. Spanning from 1st June to 15th August 2025, this dazzling spectacle will morph the park into an electrifying universe, resounding with radiant light sculptures and harmonic melodies. Meander through diverse zones, each with its distinct backdrop of sights and sounds; the festival is fully wheelchair-accessible and will run from Fridays to Mondays, between 7pm to 12am. Dive into a magical landscape adorned by luminous sea creatures and

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Galway's Westside is set to host "enchanting festive light show" this season that will be sure to light up any child (or adult's) face with a smile. Galway City Council, in association with Winterglow.ie, will present an illumination garden in Fr Burke Park from 21 November to 5 January 2025. This winter spectacle will transform the park into an awe-inspiring realm of lights and sounds where visitors can stroll through uniquely themed zones, each offering its own captivating visual and auditory delights. The festive event is fully accessible and will be open from Thursdays to Sundays from 4pm to 10pm. Organisers have invited the public "to step into a magical wonderland filled with dazzling Light Up UV animals in a vibrant, glowing setting". Families can meander through a garden of gigantic flowers and UV plants, creating lifelong memories together in this colourful winter paradise.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this ninth test with the winter light show announcement, both approaches created vivid parallel events while maintaining the festive promotional style. The manual approach achieved a higher METEOR score of 0.3319 (indicating less originality), relocating the event to Cardiff's Bute Park with similar timing and features, but was cut off at "in a vivid". The PSO-optimized version found parameters (Temperature: 0.9890, Max Tokens: 127) and achieved a better METEOR score of 0.1999, reimagining the event as a summer "Luminary Festival" in Dublin with sea creatures instead of winter animals, though it was similarly cut off at "luminous sea creatures and". Both versions successfully transformed locations and timings while maintaining the enchanting promotional language of the original.

10)

SAMPLE:

With prices of everyday items seemingly going up and up, an important update has been given on a potential double cost of living payment this August for one eligible group. Back in November, then Taoiseach Simon Harris expressed his ambition to implement a double Child Benefit payment at the end of summer to assist parents with the extra expenses they encounter during that period. He was optimistic that the government could make the €280 per child double payment an annual cost of living measure. "A double child benefit payment every August to help parents with costs, particularly around the costs of schools and the additional costs parents often face over the summer," he shared on social media. "Please share to spread the word. I need your support for Fine Gael so I can get on with delivering on this agenda." However, the likelihood of the double payment materialising has diminished, as it was omitted from the Programme for Government released earlier this year. The Government's focus regarding Child Benefit has shifted, with plans to introduce a pay-related Child Benefit scheme following the introduction of Jobseeker's Pay-Related Benefit. This new pay-related benefit would calculate payments based on previous earnings, proposing a similar approach for both Child Benefit and Parent's Benefit in the future.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2130

Generated New Text:

As tuition fees continue to rise annually, a crucial announcement has been made concerning the potential doubling of a college grant in April for one qualifying group. Previously in September, the president of Harvard University, Mark Johnson, shared his vision for a dual College Grant scheme in the spring to aid students with additional expenses they accumulate at that time. He was hopeful that the administration could establish this $2,000 per student dual payout as a permanent feature in the budget planning. "A double college grant every April to assist students with costs, particularly around the costs of summer courses and the extra expenses students often face during that time," he announced at a forum. "Help us get the word out. I need your backing for our program so we can make this a

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

With prices of everyday items seemingly going up and up, an important update has been given on a potential double cost of living payment this August for one eligible group. Back in November, then Taoiseach Simon Harris expressed his ambition to implement a double Child Benefit payment at the end of summer to assist parents with the extra expenses they encounter during that period. He was optimistic that the government could make the €280 per child double payment an annual cost of living measure. "A double child benefit payment every August to help parents with costs, particularly around the costs of schools and the additional costs parents often face over the summer," he shared on social media. "Please share to spread the word. I need your support for Fine Gael so I can get on with delivering on this agenda." However, the likelihood of the double payment materialising has diminished, as it was omitted from the Programme for Government released earlier this year. The Government's focus regarding Child Benefit has shifted, with plans to introduce a pay-related Child Benefit scheme following the introduction of Jobseeker's Pay-Related Benefit. This new pay-related benefit would calculate payments based on previous earnings, proposing a similar approach for both Child Benefit and Parent's Benefit in the future.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.94, Tokens: 103, METEOR: 0.1363

Temp: 0.91, Tokens: 132, METEOR: 0.1810

Temp: 0.94, Tokens: 118, METEOR: 0.1436

Temp: 0.82, Tokens: 106, METEOR: 0.1359

Temp: 0.80, Tokens: 100, METEOR: 0.1302

Temp: 0.96, Tokens: 100, METEOR: 0.1055

Temp: 0.85, Tokens: 108, METEOR: 0.1492

Temp: 0.87, Tokens: 129, METEOR: 0.1673

Temp: 0.82, Tokens: 107, METEOR: 0.1410

Temp: 0.94, Tokens: 100, METEOR: 0.1120

Temp: 0.97, Tokens: 100, METEOR: 0.1126

Temp: 0.87, Tokens: 100, METEOR: 0.1270

Temp: 0.88, Tokens: 122, METEOR: 0.1560

Temp: 0.87, Tokens: 107, METEOR: 0.1320

Temp: 1.00, Tokens: 100, METEOR: 0.1227

Temp: 0.96, Tokens: 100, METEOR: 0.1076

Temp: 0.88, Tokens: 100, METEOR: 0.1706

Temp: 0.90, Tokens: 114, METEOR: 0.1746

Temp: 0.89, Tokens: 103, METEOR: 0.1123

Temp: 1.00, Tokens: 100, METEOR: 0.1555

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9579

Max Tokens: 100

METEOR Score: 0.1413

Generated Text:

Rising costs of basic commodities have prompted discussions regarding a potential dual pension payment this December for a qualifying group. Last January, UK Prime Minister Boris Johnson hinted on his aim to initiate a double State Pension payment at year's end to aid retirees cope with extra expenditures during the festive period. He was hopeful of converting the £350 per person double payment into an annual inflation adjustment. "A dual state pension payment every December to support seniors with expenses, particularly those linked to winter heating and holiday costs," he

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

With prices of everyday items seemingly going up and up, an important update has been given on a potential double cost of living payment this August for one eligible group. Back in November, then Taoiseach Simon Harris expressed his ambition to implement a double Child Benefit payment at the end of summer to assist parents with the extra expenses they encounter during that period. He was optimistic that the government could make the €280 per child double payment an annual cost of living measure. "A double child benefit payment every August to help parents with costs, particularly around the costs of schools and the additional costs parents often face over the summer," he shared on social media. "Please share to spread the word. I need your support for Fine Gael so I can get on with delivering on this agenda." However, the likelihood of the double payment materialising has diminished, as it was omitted from the Programme for Government released earlier this year. The Government's focus regarding Child Benefit has shifted, with plans to introduce a pay-related Child Benefit scheme following the introduction of Jobseeker's Pay-Related Benefit. This new pay-related benefit would calculate payments based on previous earnings, proposing a similar approach for both Child Benefit and Parent's Benefit in the future.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this tenth test with the Child Benefit news story, both approaches transformed the government assistance story while maintaining the formal news reporting style. The manual approach achieved a METEOR score of 0.2130, transforming the story to a college grant doubling at Harvard University with similar financial amounts and timing, but was cut off mid-sentence at "so we can make this a". The PSO-optimized version found parameters (Temperature: 0.9579, Max Tokens: 100) and achieved a better METEOR score of 0.1413, reimagining the story as a UK pension payment for seniors during winter, with Boris Johnson in place of the Irish politician, though it was similarly cut off mid-sentence at "holiday costs," he". Both versions successfully maintained the journalistic tone while completely changing the beneficiary group and context.

11)

SAMPLE:

A new business on its way to Oranmore has welcomed the staff of its new wine bar, which will be joined by a restaurant on the town's Main Street. Fawn Food and Wine "will be opening its doors very soon" and the owners thought it was a good idea to introduce their soon-to-be customers to the team. The business was the brainchild of pals Jason and Ervin, who have worked together in three different restaurants since Ervin arrived in Ireland in 2010 and they are now going out on their own. They couldn't possibly do it all alone though, and have Joe & Rosabelle Burke on board to run Fawn Wine Bar. "We have designed our kitchen to be in the center of the building, with open views of the cooking line from the two sides," a post on the eatery's social media page said. "Fawn Restaurant is on the right, and Fawn Wine Bar is on the left hand side of the Kitchen." "We’re delighted to be partnering with Joe and Rosabelle Burke, whose roots run deep in this community." Joe grew up next door to what is now Fawn, in the heart of Oranmore and his father even put the roof on the very building that now houses the new restaurant & wine bar. Rosabelle is originally from Loughrea and went to school in Oranmore when Calasanctius was still a girls’ boarding school. "Somewhere along the way, she and Joe crossed paths, and the rest, as they say, is (a lot of) history," the post continued. "Rosabelle will be hosting your experience in the Wine Bar, where you will find a fun selection available by the glass and bottle from our cellar. "We will have local cheese and charcuterie platters, small plates of local produce & nibbles to match our wines, all cooked by Jason, Sarah & the team. We do encourage sharing. "We can’t wait to open our doors and welcome you in soon!" they added. It's understood the restaurant will be open for business in early or mid-April. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our community, you can check out any time you like. If you’re curious, you can read our Privacy Notice.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.0726

Generated New Text:

On the bustling boulevard of Aylesbury, a quaint bookstore and coffee shop named "Open Page" is prepping for its grand opening. The venture is a long-awaited dream of lifelong friends, Charles and Philippe. They met in a theatre troupe in 1995 and are finally following their shared passion. To help manage the coffee shop, they've recruited the skillful Simon and Anna Trent. "Our barista station is positioned in the centre, giving customers a peek into the art of coffee brewing," the store's Instagram post read. "Open Page Bookstore on one side and our cosy coffee shop on the other." Honoured to work with Anna and Simon Trent, known for their deep roots in Aylesbury, the post continues

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A new business on its way to Oranmore has welcomed the staff of its new wine bar, which will be joined by a restaurant on the town's Main Street. Fawn Food and Wine "will be opening its doors very soon" and the owners thought it was a good idea to introduce their soon-to-be customers to the team. The business was the brainchild of pals Jason and Ervin, who have worked together in three different restaurants since Ervin arrived in Ireland in 2010 and they are now going out on their own. They couldn't possibly do it all alone though, and have Joe & Rosabelle Burke on board to run Fawn Wine Bar. "We have designed our kitchen to be in the center of the building, with open views of the cooking line from the two sides," a post on the eatery's social media page said. "Fawn Restaurant is on the right, and Fawn Wine Bar is on the left hand side of the Kitchen." "We're delighted to be partnering with Joe and Rosabelle Burke, whose roots run deep in this community." Joe grew up next door to what is now Fawn, in the heart of Oranmore and his father even put the roof on the very building that now houses the new restaurant & wine bar. Rosabelle is originally from Loughrea and went to school in Oranmore when Calasanctius was still a girls' boarding school. "Somewhere along the way, she and Joe crossed paths, and the rest, as they say, is (a lot of) history," the post continued. "Rosabelle will be hosting your experience in the Wine Bar, where you will find a fun selection available by the glass and bottle from our cellar. "We will have local cheese and charcuterie platters, small plates of local produce & nibbles to match our wines, all cooked by Jason, Sarah & the team. We do encourage sharing. "We can't wait to open our doors and welcome you in soon!" they added. It's understood the restaurant will be open for business in early or mid-April. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.78, Tokens: 127, METEOR: 0.0741

Temp: 0.79, Tokens: 125, METEOR: 0.0777

Temp: 0.82, Tokens: 115, METEOR: 0.0651

Temp: 0.97, Tokens: 147, METEOR: 0.0749

Temp: 0.70, Tokens: 143, METEOR: 0.0990

Temp: 0.78, Tokens: 124, METEOR: 0.0701

Temp: 0.70, Tokens: 111, METEOR: 0.0742

Temp: 0.86, Tokens: 120, METEOR: 0.0782

Temp: 0.87, Tokens: 138, METEOR: 0.0742

Temp: 0.75, Tokens: 115, METEOR: 0.0703

Temp: 0.80, Tokens: 122, METEOR: 0.0782

Temp: 0.70, Tokens: 106, METEOR: 0.0572

Temp: 0.86, Tokens: 122, METEOR: 0.0729

Temp: 0.79, Tokens: 131, METEOR: 0.0872

Temp: 0.76, Tokens: 100, METEOR: 0.0756

Temp: 0.80, Tokens: 118, METEOR: 0.0624

Temp: 0.70, Tokens: 103, METEOR: 0.0768

Temp: 0.77, Tokens: 116, METEOR: 0.0676

Temp: 0.76, Tokens: 124, METEOR: 0.0808

Temp: 0.74, Tokens: 100, METEOR: 0.0573

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7000

Max Tokens: 106

METEOR Score: 0.0626

Generated Text:

An exciting new venture is coming to Ashford as the crew of a fresh café, paired with a boutique bookstore, is unveiled. The brainchild of lifelong friends John and Finn, Ashford Reads & Feeds will soon open, marking a new chapter in their shared journey. They've been inseparable since Finn moved to the UK in 2011, working in various bookstores and cafes together. Now, they're forging their own path with the help of Mary and Bill Lawson, who will manage the bookstore. "Our café

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A new business on its way to Oranmore has welcomed the staff of its new wine bar, which will be joined by a restaurant on the town's Main Street. Fawn Food and Wine "will be opening its doors very soon" and the owners thought it was a good idea to introduce their soon-to-be customers to the team. The business was the brainchild of pals Jason and Ervin, who have worked together in three different restaurants since Ervin arrived in Ireland in 2010 and they are now going out on their own. They couldn't possibly do it all alone though, and have Joe & Rosabelle Burke on board to run Fawn Wine Bar. "We have designed our kitchen to be in the center of the building, with open views of the cooking line from the two sides," a post on the eatery's social media page said. "Fawn Restaurant is on the right, and Fawn Wine Bar is on the left hand side of the Kitchen." "We're delighted to be partnering with Joe and Rosabelle Burke, whose roots run deep in this community." Joe grew up next door to what is now Fawn, in the heart of Oranmore and his father even put the roof on the very building that now houses the new restaurant & wine bar. Rosabelle is originally from Loughrea and went to school in Oranmore when Calasanctius was still a girls' boarding school. "Somewhere along the way, she and Joe crossed paths, and the rest, as they say, is (a lot of) history," the post continued. "Rosabelle will be hosting your experience in the Wine Bar, where you will find a fun selection available by the glass and bottle from our cellar. "We will have local cheese and charcuterie platters, small plates of local produce & nibbles to match our wines, all cooked by Jason, Sarah & the team. We do encourage sharing. "We can't wait to open our doors and welcome you in soon!" they added. It's understood the restaurant will be open for business in early or mid-April. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this eleventh test, both approaches created highly original business announcements with excellent METEOR scores. The manual version (0.0726) transformed a wine bar into "Open Page" bookstore/coffee shop in Aylesbury, maintaining the central viewing concept and local connections. The PSO-optimized version (0.0626) similarly reimagined the concept as "Ashford Reads & Feeds" bookstore/café with different character names. Both successfully transformed the announcement while preserving the community-focused tone.

12)

SAMPLE:

A popular west of Ireland takeaway was ordered shut by the FSAI following a HSE inspection found a dead rat at the premises. The restaurant in Roscommon town was inspected by the HSE in March, and found evidence of rodent infestation in a room used by staff of the premises. Roscommon China Palace Ltd at 11 Main Street, Roscommon was closed, and remained so for six days, after evidence of a rodent infestation was found, along with a dead rat in a trap, was found at the premises. The FSAI ordered closed the Roscommon China Palace Ltd at 11 Main Street, Roscommon on Wednesday 26 March, but the closure order was lifted six days later, on Tuesday 1 April 2025. The HSE notice, sent to the Company Secretary, Roscommon China Palace Ltd at 11 Main Street, Roscommon, explains the exact reasons for the shutdown. The inspectors' report said the premises did not have adequate procedures in place to control pests. They saw evidence of a rodent infestation in a room which houses staff toilet, staff storage facilities and laundry facilities. The inspector also outlines that a dead rat in trap was behind a washing machine at the premies.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1316

Generated New Text:

A renowned pizzeria in Manchester city had to close its doors after the FDA following an inspection discovered a rodent infestation. Alfonso's Pizza on Dean Street was thoroughly reviewed by the FDA in November, which revealed alarming signs of rodent activity in the kitchen area. Alfonso's Pizza at 15 Dean Street was obliged to halt operations for a week once the presence of rats, including the lifeless body of one, were detected on site. The FDA mandated closure of Alfonso's Pizza at 15 Dean Street on Friday 13 November, but lifted the order a week later, on Friday 20 November 2026. The notice from the FDA, addressed to the Manager of Alfonso's Pizza at 15

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A popular west of Ireland takeaway was ordered shut by the FSAI following a HSE inspection found a dead rat at the premises. The restaurant in Roscommon town was inspected by the HSE in March, and found evidence of rodent infestation in a room used by staff of the premises. Roscommon China Palace Ltd at 11 Main Street, Roscommon was closed, and remained so for six days, after evidence of a rodent infestation was found, along with a dead rat in a trap, was found at the premises. The FSAI ordered closed the Roscommon China Palace Ltd at 11 Main Street, Roscommon on Wednesday 26 March, but the closure order was lifted six days later, on Tuesday 1 April 2025. The HSE notice, sent to the Company Secretary, Roscommon China Palace Ltd at 11 Main Street, Roscommon, explains the exact reasons for the shutdown. The inspectors' report said the premises did not have adequate procedures in place to control pests. They saw evidence of a rodent infestation in a room which houses staff toilet, staff storage facilities and laundry facilities. The inspector also outlines that a dead rat in trap was behind a washing machine at the premies.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 123, METEOR: 0.1606

Temp: 0.71, Tokens: 149, METEOR: 0.1903

Temp: 0.70, Tokens: 122, METEOR: 0.1555

Temp: 0.90, Tokens: 137, METEOR: 0.1866

Temp: 0.95, Tokens: 121, METEOR: 0.1769

Temp: 0.70, Tokens: 102, METEOR: 0.1334

Temp: 0.70, Tokens: 149, METEOR: 0.1870

Temp: 0.85, Tokens: 145, METEOR: 0.1758

Temp: 0.88, Tokens: 147, METEOR: 0.1841

Temp: 0.80, Tokens: 123, METEOR: 0.1306

Temp: 0.70, Tokens: 100, METEOR: 0.1157

Temp: 0.70, Tokens: 147, METEOR: 0.1714

Temp: 0.84, Tokens: 139, METEOR: 0.1704

Temp: 0.78, Tokens: 141, METEOR: 0.1325

Temp: 0.73, Tokens: 120, METEOR: 0.1566

Temp: 0.70, Tokens: 100, METEOR: 0.1325

Temp: 0.70, Tokens: 129, METEOR: 0.1297

Temp: 0.73, Tokens: 114, METEOR: 0.1561

Temp: 0.72, Tokens: 127, METEOR: 0.1353

Temp: 0.71, Tokens: 115, METEOR: 0.1558

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7000

Max Tokens: 100

METEOR Score: 0.1333

Generated Text:

A beloved bookstore in South Canterbury was forced to close by the Ministry of Health after an inspection discovered a cockroach infestation. The store in Timaru was examined in June and evidence of pest infestation was found in the storage area. The South Canterbury Book Exchange at 12 High Street, Timaru was shut down, and remained so for a week, following the discovery of multiple cockroaches and their nests. The Health Ministry mandated the closure of the South Canterbury Book Exchange on Friday, 15

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A popular west of Ireland takeaway was ordered shut by the FSAI following a HSE inspection found a dead rat at the premises. The restaurant in Roscommon town was inspected by the HSE in March, and found evidence of rodent infestation in a room used by staff of the premises. Roscommon China Palace Ltd at 11 Main Street, Roscommon was closed, and remained so for six days, after evidence of a rodent infestation was found, along with a dead rat in a trap, was found at the premises. The FSAI ordered closed the Roscommon China Palace Ltd at 11 Main Street, Roscommon on Wednesday 26 March, but the closure order was lifted six days later, on Tuesday 1 April 2025. The HSE notice, sent to the Company Secretary, Roscommon China Palace Ltd at 11 Main Street, Roscommon, explains the exact reasons for the shutdown. The inspectors' report said the premises did not have adequate procedures in place to control pests. They saw evidence of a rodent infestation in a room which houses staff toilet, staff storage facilities and laundry facilities. The inspector also outlines that a dead rat in trap was behind a washing machine at the premies.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this final test with the restaurant closure story, both approaches created parallel business closure narratives while maintaining the formal health inspection tone. The manual approach (METEOR: 0.1316) transformed the Chinese restaurant into "Alfonso's Pizza" in Manchester with FDA inspection finding rats, while the PSO-optimized version (Temperature: 0.7000, Max Tokens: 100, METEOR: 0.1333) reimagined it as a bookstore in New Zealand with cockroach infestation discovered by the Ministry of Health. Both effectively maintained the formal regulatory style while changing locations, business types, and pests.

13)

SAMPLE:

Easter may be incoming but move over chocolate eggs, the hottest trend in confectionery this spring is Dubai-style chocolate. UK retailers have put strict two-bar limits on shoppers buying the pistachio and crispy kadayif-filled treats after the bars notched up hundreds of thousands of posts on TikTok made by fans keen to try them. Lindt released their own €13 version of the bars earlier in the year and they instantly sold out in the chocolate giant’s stores and online. The iconic bars have come back in stock this week with a strict two bars per person limit, but we’ve spotted a way for savvy shoppers to get two bars for less than a fiver - making them even cheaper than the dupes Lidl shoppers have been queuing for hours to snag. Money saving site TopCashback allows shoppers to get a free €20 bonus when they sign up as new members and then allows them to get a percentage of their spend back every time they spend money online with thousands of different retailers. For shoppers at Lindt’s online store this means if they bought two of the 145g bars for €15 each they would effectively get the chocolate for €7.50 after cashback, a hefty saving.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2082

Generated New Text:

Autumn might be around the corner, but push aside pumpkin-flavoured treats, the coolest trend in baked sweets this fall is New-York-style cheesecake. Retailers in Canada have implemented a strict one-cake limit for patrons purchasing these creamy, graham-cracker crust delights as the dessert has quietly accumulated a large following with thousands of posts on Instagram from eager followers. Renowned bakery Chez Jacques introduced their own CAD $30 version of the cake earlier in the year and they immediately sold out in-store and online. These legendary cakes are back this week with a strict one-cake-per-person limit, but there's a trick for astute customers to get a whole cake for less than CAD $20 - making it a better deal than

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Easter may be incoming but move over chocolate eggs, the hottest trend in confectionery this spring is Dubai-style chocolate. UK retailers have put strict two-bar limits on shoppers buying the pistachio and crispy kadayif-filled treats after the bars notched up hundreds of thousands of posts on TikTok made by fans keen to try them. Lindt released their own €13 version of the bars earlier in the year and they instantly sold out in the chocolate giant's stores and online. The iconic bars have come back in stock this week with a strict two bars per person limit, but we've spotted a way for savvy shoppers to get two bars for less than a fiver - making them even cheaper than the dupes Lidl shoppers have been queuing for hours to snag. Money saving site TopCashback allows shoppers to get a free €20 bonus when they sign up as new members and then allows them to get a percentage of their spend back every time they spend money online with thousands of different retailers. For shoppers at Lindt's online store this means if they bought two of the 145g bars for €15 each they would effectively get the chocolate for €7.50 after cashback, a hefty saving.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 145, METEOR: 0.2300

Temp: 0.82, Tokens: 108, METEOR: 0.1678

Temp: 0.96, Tokens: 147, METEOR: 0.2019

Temp: 0.83, Tokens: 139, METEOR: 0.1517

Temp: 0.92, Tokens: 144, METEOR: 0.1806

Temp: 0.70, Tokens: 120, METEOR: 0.1662

Temp: 0.97, Tokens: 100, METEOR: 0.0961

Temp: 0.85, Tokens: 132, METEOR: 0.1823

Temp: 0.70, Tokens: 120, METEOR: 0.1609

Temp: 1.00, Tokens: 116, METEOR: 0.1246

Temp: 0.70, Tokens: 104, METEOR: 0.1240

Temp: 1.00, Tokens: 100, METEOR: 0.0728

Temp: 0.81, Tokens: 120, METEOR: 0.1357

Temp: 0.81, Tokens: 115, METEOR: 0.1758

Temp: 1.00, Tokens: 100, METEOR: 0.1080

Temp: 0.82, Tokens: 100, METEOR: 0.1139

Temp: 1.00, Tokens: 100, METEOR: 0.1360

Temp: 0.85, Tokens: 108, METEOR: 0.1286

Temp: 0.91, Tokens: 121, METEOR: 0.1585

Temp: 1.00, Tokens: 100, METEOR: 0.0986

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 100

METEOR Score: 0.1140

Generated Text:

This year's Christmas season is getting a touch of Belgian luxury, with the resurgence of Belgian pralines as the hottest holiday treat trend. UK supermarkets are limiting customers to a maximum of two boxes each, after influencers flooded Instagram with praise for the nutty, ganache-filled delights. Belgian chocolatier Neuhaus released their premium £15 assortment earlier this year and they immediately sold out both in-store and online. These boxes are back in stock, but only two per customer to ensure fair distribution.

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Easter may be incoming but move over chocolate eggs, the hottest trend in confectionery this spring is Dubai-style chocolate. UK retailers have put strict two-bar limits on shoppers buying the pistachio and crispy kadayif-filled treats after the bars notched up hundreds of thousands of posts on TikTok made by fans keen to try them. Lindt released their own €13 version of the bars earlier in the year and they instantly sold out in the chocolate giant's stores and online. The iconic bars have come back in stock this week with a strict two bars per person limit, but we've spotted a way for savvy shoppers to get two bars for less than a fiver - making them even cheaper than the dupes Lidl shoppers have been queuing for hours to snag. Money saving site TopCashback allows shoppers to get a free €20 bonus when they sign up as new members and then allows them to get a percentage of their spend back every time they spend money online with thousands of different retailers. For shoppers at Lindt's online store this means if they bought two of the 145g bars for €15 each they would effectively get the chocolate for €7.50 after cashback, a hefty saving.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this thirteenth test with the Dubai-style chocolate trend story, both approaches created parallel trendy food stories while maintaining the consumer tip-style writing. The manual approach achieved a METEOR score of 0.2082, transforming the chocolate bars to New York-style cheesecake in Canada with similar purchase limits and online deals, though it was cut off at "making it a better deal than". The PSO-optimized version (Temperature: 1.0000, Max Tokens: 100, METEOR: 0.1140) reimagined the trend as Belgian pralines for Christmas in the UK, maintaining the purchase limits but creating a more complete narrative that included all essential elements in fewer words, demonstrating that the higher temperature parameter produced more originality.

14)

SAMPLE:

Galway City Council, in collaboration with the Land Development Agency, has lodged a planning application for an expansive new residential project to An Bord Pleanála. The proposed scheme, christened Corrib Causeway and situated on on Dyke Road, Terryland, will bring 219 apartment units, complemented by a variety of community facilities, to an in-demand area of the city. The development is envisaged as a single block varying from five to nine storeys above a lower ground floor and will house 109 one-bedroom, 100 two-bedroom, and 10 three-bedroom apartments. Various studies were conducted ahead of the application, these concluded that the project scores highly in terms of daylight and sunlight exposure. While some impacts were observed, none affected windows serving residential areas. Given Galway City Council's wider redevelopment strategy, the build was deemed "acceptable within the overall planning context" by a preliminary study of the build The proposed plans also incorporate a 241 sq m childcare facility complete with a dedicated play area, situated at ground level.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2132

Generated New Text:

In cooperation with the Urban Renewal Corporation, the San Francisco City Council has submitted an application for a major new housing development to the Planning Commission. The proposed project, dubbed Golden Gate Gateway and located on Market Street, Downtown, aims to provide 250 apartment units, alongside multiple communal amenities, in an area of the city experiencing high demand. The development is designed as a cohesive block, ranging from four to eight floors above basement level, housing 130 studios, 100 one-bedroom, and 20 two-bedroom apartments. Pre-application studies, which assessed factors such as daylight access, concluded that the project largely met the city's living standards. Although some effects were noted, none of these impacted views for residential units. In light of San Francisco City Council

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Galway City Council, in collaboration with the Land Development Agency, has lodged a planning application for an expansive new residential project to An Bord Pleanála. The proposed scheme, christened Corrib Causeway and situated on on Dyke Road, Terryland, will bring 219 apartment units, complemented by a variety of community facilities, to an in-demand area of the city. The development is envisaged as a single block varying from five to nine storeys above a lower ground floor and will house 109 one-bedroom, 100 two-bedroom, and 10 three-bedroom apartments. Various studies were conducted ahead of the application, these concluded that the project scores highly in terms of daylight and sunlight exposure. While some impacts were observed, none affected windows serving residential areas. Given Galway City Council's wider redevelopment strategy, the build was deemed "acceptable within the overall planning context" by a preliminary study of the build The proposed plans also incorporate a 241 sq m childcare facility complete with a dedicated play area, situated at ground level.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.96, Tokens: 122, METEOR: 0.1482

Temp: 0.83, Tokens: 137, METEOR: 0.2130

Temp: 0.71, Tokens: 144, METEOR: 0.2089

Temp: 0.94, Tokens: 149, METEOR: 0.1757

Temp: 0.72, Tokens: 108, METEOR: 0.1496

Temp: 0.97, Tokens: 137, METEOR: 0.2670

Temp: 0.94, Tokens: 115, METEOR: 0.1386

Temp: 0.78, Tokens: 121, METEOR: 0.1673

Temp: 0.89, Tokens: 132, METEOR: 0.2215

Temp: 0.86, Tokens: 100, METEOR: 0.1709

Temp: 0.96, Tokens: 136, METEOR: 0.1969

Temp: 1.00, Tokens: 104, METEOR: 0.1266

Temp: 0.85, Tokens: 110, METEOR: 0.1640

Temp: 0.92, Tokens: 120, METEOR: 0.2125

Temp: 0.93, Tokens: 100, METEOR: 0.1649

Temp: 0.96, Tokens: 119, METEOR: 0.1753

Temp: 1.00, Tokens: 100, METEOR: 0.1544

Temp: 0.92, Tokens: 102, METEOR: 0.1646

Temp: 0.97, Tokens: 120, METEOR: 0.1519

Temp: 0.88, Tokens: 101, METEOR: 0.1742

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 104

METEOR Score: 0.1244

Generated Text:

In partnership with the Urban Building Authority, the Liverpool City Council has submitted a planning permission request for a large-scale housing initiative to the National Planning Inspectorate. The planned project, bearing the name "Mersey Shoreline", located in Baltic Triangle, proposes 300 new apartments, supplemented with myriad local amenities in a highly coveted part of town. The plan envisages a single structure ranging from six to ten storeys, set above a basement level, providing 125 single, 150 double, and 25 triple bedroom apartments

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Galway City Council, in collaboration with the Land Development Agency, has lodged a planning application for an expansive new residential project to An Bord Pleanála. The proposed scheme, christened Corrib Causeway and situated on on Dyke Road, Terryland, will bring 219 apartment units, complemented by a variety of community facilities, to an in-demand area of the city. The development is envisaged as a single block varying from five to nine storeys above a lower ground floor and will house 109 one-bedroom, 100 two-bedroom, and 10 three-bedroom apartments. Various studies were conducted ahead of the application, these concluded that the project scores highly in terms of daylight and sunlight exposure. While some impacts were observed, none affected windows serving residential areas. Given Galway City Council's wider redevelopment strategy, the build was deemed "acceptable within the overall planning context" by a preliminary study of the build The proposed plans also incorporate a 241 sq m childcare facility complete with a dedicated play area, situated at ground level.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this fourteenth test with the residential project announcement, both approaches created parallel property development stories while maintaining formal planning proposal language. The manual approach (METEOR: 0.2132) transformed the project to San Francisco's "Golden Gate Gateway" with similar apartment distribution and features, while the PSO-optimized version (Temperature: 1.0000, Max Tokens: 104, METEOR: 0.1244) reimagined it as Liverpool's "Mersey Shoreline" in the Baltic Triangle area. Both effectively maintained the formal planning document style while changing locations and project specifics.

15)

SAMPLE:

One of the city's best-loved bars will spring back into life soon as the new owners teased the refurbished pub. Eyre Square and Prospect Hill has long been home to some of the city's best pubs, and the loss of McGettigan's was felt across the city. However, it is confirmed as reopening soon as Screene's on the Square in the coming weeks. The new pub shared details of their progress: "We are still under construction, but opening day is getting closer. Right now, we are busy layering bricks on our new wall." The bar has been teasing since early April when they went looking for staff to bring the bar back to life. A sign spotted in the window of the closed down spot in April 2025 showed that 'The New Local' will be opening and has a significant number of jobs on offer. Little was known about 'The New Local' but it will be a gastropub, given the three kinds of fancy chef that they are hoping to hire in the coming weeks. The sign reads: "We are Hiring. The New Local, coming to the Square. Hiring: Sous Chef, Bar Manager, Supervisor, Chef de Partie, Bartenders, Waitress-Waiter, Security, Commis Chef & Barback. Please forward CVs to: moycullencatering@gmail.com". Given that at least two of the jobs are pluralised, it's possible that the new spot could employ between 10 to 15 people.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1297

Generated New Text:

A local favorite bakery will rise again as the new proprietors hint at the renovation and return of The Dough Shop. Market Street and Bridge Way have long housed fantastic iconic bakeries, making the closure of O'Sullivan's a blow to the community. However, the reemergence of the bakery as "Peter's Bakehouse" is imminent. The owners shared updates of the reopening saying, "The kitchen is still under renovation, but the grand reopening is not far off. At the moment, we're immersed in setting up our new ovens". They've been hinting at the bakery's rebirth from early May when they initiated their recruitment drive. A notice seen in the defunct shop's window in May 2025 advertised that '

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

One of the city's best-loved bars will spring back into life soon as the new owners teased the refurbished pub. Eyre Square and Prospect Hill has long been home to some of the city's best pubs, and the loss of McGettigan's was felt across the city. However, it is confirmed as reopening soon as Screene's on the Square in the coming weeks. The new pub shared details of their progress: "We are still under construction, but opening day is getting closer. Right now, we are busy layering bricks on our new wall." The bar has been teasing since early April when they went looking for staff to bring the bar back to life. A sign spotted in the window of the closed down spot in April 2025 showed that 'The New Local' will be opening and has a significant number of jobs on offer. Little was known about 'The New Local' but it will be a gastropub, given the three kinds of fancy chef that they are hoping to hire in the coming weeks. The sign reads: "We are Hiring. The New Local, coming to the Square. Hiring: Sous Chef, Bar Manager, Supervisor, Chef de Partie, Bartenders, Waitress-Waiter, Security, Commis Chef & Barback. Please forward CVs to: moycullencatering@gmail.com". Given that at least two of the jobs are pluralised, it's possible that the new spot could employ between 10 to 15 people.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.93, Tokens: 110, METEOR: 0.1196

Temp: 0.85, Tokens: 147, METEOR: 0.1750

Temp: 0.82, Tokens: 126, METEOR: 0.1415

Temp: 0.95, Tokens: 122, METEOR: 0.1600

Temp: 0.76, Tokens: 148, METEOR: 0.1695

Temp: 0.87, Tokens: 106, METEOR: 0.1083

Temp: 0.91, Tokens: 150, METEOR: 0.1541

Temp: 0.95, Tokens: 100, METEOR: 0.0855

Temp: 1.00, Tokens: 106, METEOR: 0.1217

Temp: 0.94, Tokens: 150, METEOR: 0.1473

Temp: 0.84, Tokens: 102, METEOR: 0.1211

Temp: 0.95, Tokens: 141, METEOR: 0.1207

Temp: 1.00, Tokens: 100, METEOR: 0.1061

Temp: 1.00, Tokens: 100, METEOR: 0.0906

Temp: 1.00, Tokens: 141, METEOR: 0.1234

Temp: 0.88, Tokens: 102, METEOR: 0.0833

Temp: 0.95, Tokens: 122, METEOR: 0.0873

Temp: 0.97, Tokens: 100, METEOR: 0.0855

Temp: 0.97, Tokens: 100, METEOR: 0.0767

Temp: 1.00, Tokens: 126, METEOR: 0.1415

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9685

Max Tokens: 100

METEOR Score: 0.0857

Generated Text:

A prominent theatre in the heart of the city is on the brink of a sensational revival as the new trustees recently gave a sneak peek into the overhauled amphitheater. For years, Theatre Square and Playhouse Lane have housed several iconic auditoriums, and the closure of Le Stratford monumentally affected the theater-loving community. Yet there's good news. It will soon re-open as "The Stratford Grande Playhouse". The theatre's management shared: "The restoration is underway. The

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

One of the city's best-loved bars will spring back into life soon as the new owners teased the refurbished pub. Eyre Square and Prospect Hill has long been home to some of the city's best pubs, and the loss of McGettigan's was felt across the city. However, it is confirmed as reopening soon as Screene's on the Square in the coming weeks. The new pub shared details of their progress: "We are still under construction, but opening day is getting closer. Right now, we are busy layering bricks on our new wall." The bar has been teasing since early April when they went looking for staff to bring the bar back to life. A sign spotted in the window of the closed down spot in April 2025 showed that 'The New Local' will be opening and has a significant number of jobs on offer. Little was known about 'The New Local' but it will be a gastropub, given the three kinds of fancy chef that they are hoping to hire in the coming weeks. The sign reads: "We are Hiring. The New Local, coming to the Square. Hiring: Sous Chef, Bar Manager, Supervisor, Chef de Partie, Bartenders, Waitress-Waiter, Security, Commis Chef & Barback. Please forward CVs to: moycullencatering@gmail.com". Given that at least two of the jobs are pluralised, it's possible that the new spot could employ between 10 to 15 people.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this fifteenth test with the pub reopening story, both approaches created parallel business revival stories while maintaining the local interest article style. The manual approach (METEOR: 0.1297) transformed the pub into "Peter's Bakehouse," a renovating bakery with similar hiring patterns and community impact, though it was cut off at "advertised that". The PSO-optimized version (Temperature: 0.9685, Max Tokens: 100, METEOR: 0.0857) reimagined the story as a theater revival called "The Stratford Grande Playhouse," achieving exceptional originality as shown by the very low METEOR score. Both effectively maintained the promotional, neighborhood-focused tone while changing the business types.

16)

SAMPLE:

Ireland could potentially be in for more incredible weather with temperatures reaching 13C over the average for this time of the year. This week has seen glorious sunshine hit Ireland, and temperatures skyrocketing well into the 20s. It appears that it may continue with some estimating that record-breaking heat in the summertime looks to be a certainty. A heat weather map shared to X shows both Ireland and the UK in red as warm weather looks set to make its way to northern Europe. Peter Dynes, the Managing Director at the nonprofit organisation Mirrors for Earth's Energy Rebalancing (MEER) shared the map online. In his caption, Dynes wrote: "Incredible April heat: Europe and the UK are running a fever, with temps in many places up to 12°C above normal on Wednesday. "If this pattern continues into summer, record-breaking heat is all but certain." Wednesday saw the hottest day ever recorded in Ireland in April as Athenry reached a temperature of 25.8C. The last time that temperature was reached in April was in 1984 in Glenties, Co Donegal. Three counties reached temperatures over 25C yesterday. While conditions should remain dry heading into the May Bank Holiday, the heat looks likely to come down a notch according to Met Éireann. Friday will start dry "with a mix of cloud and sunny spells, though it will turn cloudier from the north with a few light showers developing." Temperatures are set to be around 13C in the north and 18C in the south. Saturday and Sunday should be generally sunny with some cloudy spells as temperatures range from 9C to 16C. Join Galway Beo’s top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our community, you can check out any time you like. If you’re curious, you can read our Privacy Notice.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1153

Generated New Text:

California is preparing for bizarre weather conditions with temperatures expected to be 15F above the norm for this season. This week brought wonderful sunshine pouring over California, with temperatures soaring into the 70s. Predictions indicate this trend may persist, implying record-shattering heat this summer is inevitable. A heat map posted to W reveals both the US and Canada colored in red, indicating warm weather seems destined to envelop North America. Linda Baker, the Chief Executive Officer at the nonprofit group Climate Balance Alliance (CBA), posted the map online. In her caption, Baker stated: "Unusual April heat: America and Canada are blistering, with temps in various locations reaching 14°F above average on Tuesday. "If this pattern endures into summer,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Ireland could potentially be in for more incredible weather with temperatures reaching 13C over the average for this time of the year. This week has seen glorious sunshine hit Ireland, and temperatures skyrocketing well into the 20s. It appears that it may continue with some estimating that record-breaking heat in the summertime looks to be a certainty. A heat weather map shared to X shows both Ireland and the UK in red as warm weather looks set to make its way to northern Europe. Peter Dynes, the Managing Director at the nonprofit organisation Mirrors for Earth's Energy Rebalancing (MEER) shared the map online. In his caption, Dynes wrote: "Incredible April heat: Europe and the UK are running a fever, with temps in many places up to 12°C above normal on Wednesday. "If this pattern continues into summer, record-breaking heat is all but certain." Wednesday saw the hottest day ever recorded in Ireland in April as Athenry reached a temperature of 25.8C. The last time that temperature was reached in April was in 1984 in Glenties, Co Donegal. Three counties reached temperatures over 25C yesterday. While conditions should remain dry heading into the May Bank Holiday, the heat looks likely to come down a notch according to Met Éireann. Friday will start dry "with a mix of cloud and sunny spells, though it will turn cloudier from the north with a few light showers developing." Temperatures are set to be around 13C in the north and 18C in the south. Saturday and Sunday should be generally sunny with some cloudy spells as temperatures range from 9C to 16C. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.95, Tokens: 134, METEOR: 0.0838

Temp: 0.78, Tokens: 129, METEOR: 0.1334

Temp: 0.82, Tokens: 141, METEOR: 0.1338

Temp: 0.77, Tokens: 145, METEOR: 0.1182

Temp: 0.83, Tokens: 146, METEOR: 0.1153

Temp: 1.00, Tokens: 131, METEOR: 0.0886

Temp: 0.81, Tokens: 143, METEOR: 0.1064

Temp: 0.88, Tokens: 132, METEOR: 0.0981

Temp: 0.73, Tokens: 125, METEOR: 0.1345

Temp: 0.89, Tokens: 140, METEOR: 0.1247

Temp: 1.00, Tokens: 131, METEOR: 0.0808

Temp: 0.82, Tokens: 149, METEOR: 0.1385

Temp: 0.93, Tokens: 127, METEOR: 0.0694

Temp: 0.81, Tokens: 122, METEOR: 0.0903

Temp: 0.89, Tokens: 140, METEOR: 0.1178

Temp: 1.00, Tokens: 130, METEOR: 0.1213

Temp: 0.85, Tokens: 147, METEOR: 0.1274

Temp: 0.95, Tokens: 125, METEOR: 0.0646

Temp: 0.91, Tokens: 122, METEOR: 0.0726

Temp: 0.91, Tokens: 136, METEOR: 0.0917

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9521

Max Tokens: 125

METEOR Score: 0.0855

Generated Text:

Canada is bracing for a notably warm stretch, as forecasts predict temperatures soaring up to 15C above season's average. Spectacular sunshine has bathed Canada these past few days, pushing thermometers to the mid-20s. This trend might persist, potentially leading to an all-time summer heat record. A weather heat map posted by Y exhibits Canada and parts of the US glowing red, as the heat wave is set to envelope North America. Jerry Brooks, CEO of nonprofit organization Climate Chains (CC), shared the map digitally. His caption read: "Amazing April heat: North America is truly feeling the heat, with

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Ireland could potentially be in for more incredible weather with temperatures reaching 13C over the average for this time of the year. This week has seen glorious sunshine hit Ireland, and temperatures skyrocketing well into the 20s. It appears that it may continue with some estimating that record-breaking heat in the summertime looks to be a certainty. A heat weather map shared to X shows both Ireland and the UK in red as warm weather looks set to make its way to northern Europe. Peter Dynes, the Managing Director at the nonprofit organisation Mirrors for Earth's Energy Rebalancing (MEER) shared the map online. In his caption, Dynes wrote: "Incredible April heat: Europe and the UK are running a fever, with temps in many places up to 12°C above normal on Wednesday. "If this pattern continues into summer, record-breaking heat is all but certain." Wednesday saw the hottest day ever recorded in Ireland in April as Athenry reached a temperature of 25.8C. The last time that temperature was reached in April was in 1984 in Glenties, Co Donegal. Three counties reached temperatures over 25C yesterday. While conditions should remain dry heading into the May Bank Holiday, the heat looks likely to come down a notch according to Met Éireann. Friday will start dry "with a mix of cloud and sunny spells, though it will turn cloudier from the north with a few light showers developing." Temperatures are set to be around 13C in the north and 18C in the south. Saturday and Sunday should be generally sunny with some cloudy spells as temperatures range from 9C to 16C. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this sixteenth test with the Ireland weather report, both approaches created parallel heat wave stories while maintaining the meteorological news style. The manual approach (METEOR: 0.1153) relocated the story to California with comparable temperature anomalies and quoted a similar climate organization expert, though cut off at "If this pattern endures into summer,". The PSO-optimized version (Temperature: 0.9521, Max Tokens: 125, METEOR: 0.0855) transposed the story to Canada with an invented organization called "Climate Chains," achieving better originality as shown by the lower METEOR score. Both effectively maintained the weather report style while changing locations and details.

17)

SAMPLE:

A newly launched street food concept is set to bring exciting new flavours to a popular Galway tourist village in the coming weeks and months. Tiffin Fusion Street Food will be coming to the Forge in Kinvara and has just been launched on Monday. "TIFFIN is bringing bold Indian flavours with a modern twist to Kinvara, crafted with love by Roz," the business's social media page reads. "Ooooh how exciting! So looking forward to this!" one social media user wrote. Details about the new eatery's menu and opening date are yet to be revealed but Tiffin will certainly be a welcome addition to Kinvara. In other foodie news, one of the coolest international music acts doing the rounds at the moment showed off a lesser talent this week in Galway city - food reviews. The alternative electronic and dance superstar, Denis Sulta, casually dropped a review of Supermac's food to his massive following, stunning many and inducing an appetite in all. Sulta, 32, tried two of the menu staples and a couple of the iconic Galway spot's sides, and was thoroughly impressed, despite one detail he would have changed had he known before ordering.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1381

Generated New Text:

A fresh farmers market experience is about to bring innovative gourmet treats to a bustling town in the heart of Provence. Terroir Food Market is gearing up for its debut in the quaint Van Gogh’s Plaza in Arles. "TERROIR offers vibrant French delicacies with a contemporary flair in Arles, exquisitely handcrafted by Chef Pierre," the company's online profile details. "My taste buds are preparing for a dance! I can't wait!" an online follower commented. The final details about Terroir's offerings and grand opening are still under wraps but it undeniably promises to be an appealing supplement to Arles' food scene. In more gastronomic updates, one of the leading international film stars took an unexpected

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A newly launched street food concept is set to bring exciting new flavours to a popular Galway tourist village in the coming weeks and months. Tiffin Fusion Street Food will be coming to the Forge in Kinvara and has just been launched on Monday. "TIFFIN is bringing bold Indian flavours with a modern twist to Kinvara, crafted with love by Roz," the business's social media page reads. "Ooooh how exciting! So looking forward to this!" one social media user wrote. Details about the new eatery's menu and opening date are yet to be revealed but Tiffin will certainly be a welcome addition to Kinvara. In other foodie news, one of the coolest international music acts doing the rounds at the moment showed off a lesser talent this week in Galway city - food reviews. The alternative electronic and dance superstar, Denis Sulta, casually dropped a review of Supermac's food to his massive following, stunning many and inducing an appetite in all. Sulta, 32, tried two of the menu staples and a couple of the iconic Galway spot's sides, and was thoroughly impressed, despite one detail he would have changed had he known before ordering.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.76, Tokens: 111, METEOR: 0.1968

Temp: 0.79, Tokens: 102, METEOR: 0.0930

Temp: 0.77, Tokens: 140, METEOR: 0.1550

Temp: 0.97, Tokens: 114, METEOR: 0.1676

Temp: 0.84, Tokens: 139, METEOR: 0.1578

Temp: 0.71, Tokens: 130, METEOR: 0.1714

Temp: 0.80, Tokens: 100, METEOR: 0.0993

Temp: 0.80, Tokens: 141, METEOR: 0.1670

Temp: 0.93, Tokens: 130, METEOR: 0.0977

Temp: 0.79, Tokens: 124, METEOR: 0.1705

Temp: 0.72, Tokens: 127, METEOR: 0.1616

Temp: 0.80, Tokens: 100, METEOR: 0.1429

Temp: 0.80, Tokens: 141, METEOR: 0.1864

Temp: 0.89, Tokens: 138, METEOR: 0.1325

Temp: 0.77, Tokens: 121, METEOR: 0.1314

Temp: 0.73, Tokens: 114, METEOR: 0.1394

Temp: 0.80, Tokens: 100, METEOR: 0.1171

Temp: 0.79, Tokens: 133, METEOR: 0.1810

Temp: 0.86, Tokens: 134, METEOR: 0.1604

Temp: 0.76, Tokens: 117, METEOR: 0.1703

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7948

Max Tokens: 102

METEOR Score: 0.1173

Generated Text:

The bustling city of Bath is about to become even more exciting with the imminent arrival of a new culinary experience. Posh Nosh, a gourmet food truck concept, will soon be making its debut in the heart of the city. "Posh Nosh is set to tantalise Bath with upscale British fare infused with a contemporary edge, crafted with passion by our talented Chef Sam," reads the business's Instagram caption. The announcement sparked excitement among followers, with one commenting, "Can't wait to try it!"

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A newly launched street food concept is set to bring exciting new flavours to a popular Galway tourist village in the coming weeks and months. Tiffin Fusion Street Food will be coming to the Forge in Kinvara and has just been launched on Monday. "TIFFIN is bringing bold Indian flavours with a modern twist to Kinvara, crafted with love by Roz," the business's social media page reads. "Ooooh how exciting! So looking forward to this!" one social media user wrote. Details about the new eatery's menu and opening date are yet to be revealed but Tiffin will certainly be a welcome addition to Kinvara. In other foodie news, one of the coolest international music acts doing the rounds at the moment showed off a lesser talent this week in Galway city - food reviews. The alternative electronic and dance superstar, Denis Sulta, casually dropped a review of Supermac's food to his massive following, stunning many and inducing an appetite in all. Sulta, 32, tried two of the menu staples and a couple of the iconic Galway spot's sides, and was thoroughly impressed, despite one detail he would have changed had he known before ordering.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this seventeenth test with the street food announcement, both approaches created parallel food business launch stories while maintaining the local food scene reporting style. The manual approach (METEOR: 0.1381) reimagined the concept as "Terroir Food Market" in Arles, France with similar enthusiastic social media reactions, though it was cut off at "one of the leading international film stars took an unexpected". The PSO-optimized version (Temperature: 0.7948, Max Tokens: 102, METEOR: 0.1173) transformed it into "Posh Nosh" in Bath with British cuisine, producing a more concise and complete announcement without the celebrity portion.

18)

SAMPLE:

A popular Co. Galway takeaway has thanked its customers in an update about the business's return after a major incident forced them to close. Earlier this month, fire engines raced to Giovanni's on Main Street in Oranmore after a fire broke out at the Italian takeaway on Wednesday 5 March at around 8pm. Luckily, the business's owners announced that Giovanni's would be reopening this week. The takeaway's Facebook page posted a photo of the staff plus a mini manager of sorts, holding signs saying "OPEN", with the announcement: "After a short break due to a small fire, Giovanni’s Takeaway is reopening on Wednesday, 26th March! While we were closed, we took the opportunity to refresh our space with some exciting renovations—come check it out!" "As a thank you for your support, enjoy 10% off your next order with promo code: WEAREBACK10 (valid for a limited time). "We can’t wait to welcome you back! See you soon," the announcement ended. Fans of Giovanni's were happy with the news, with one person writing: "Can't wait, nothing beats Giovanni's chips!" Another commenter said: "We missed you!" The post received over one hundred likes in an hour. In other news, a "bold new dining experience" for Galway is being fronted by a talented chef who is bringing elements of "land, fire and sea" to their new restaurant.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1532

Generated New Text:

A beloved bookshop in downtown Florence had to shut its doors temporarily following a severe water leak. Earlier in April, emergency services rushed to "Shakespeare & Company" bookstore located on Via Arte della Lana, after a pipe burst on the evening of the 1st. In good news, the proprietors have announced that the beloved bookstore would be back in business this week. The shop's Twitter account showed happy employees holding "OPEN" signs, and added, "After temporary closure due to a water leak, Shakespeare & Company is ecstatic to be back on Wednesday, 21st April! We've done some exciting refurbishments while we were gone - come see for yourself!". They ended with gratitude, "Thank you for your patience, enjoy 10

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A popular Co. Galway takeaway has thanked its customers in an update about the business's return after a major incident forced them to close. Earlier this month, fire engines raced to Giovanni's on Main Street in Oranmore after a fire broke out at the Italian takeaway on Wednesday 5 March at around 8pm. Luckily, the business's owners announced that Giovanni's would be reopening this week. The takeaway's Facebook page posted a photo of the staff plus a mini manager of sorts, holding signs saying "OPEN", with the announcement: "After a short break due to a small fire, Giovanni's Takeaway is reopening on Wednesday, 26th March! While we were closed, we took the opportunity to refresh our space with some exciting renovations—come check it out!" "As a thank you for your support, enjoy 10% off your next order with promo code: WEAREBACK10 (valid for a limited time). "We can't wait to welcome you back! See you soon," the announcement ended. Fans of Giovanni's were happy with the news, with one person writing: "Can't wait, nothing beats Giovanni's chips!" Another commenter said: "We missed you!" The post received over one hundred likes in an hour. In other news, a "bold new dining experience" for Galway is being fronted by a talented chef who is bringing elements of "land, fire and sea" to their new restaurant.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.74, Tokens: 125, METEOR: 0.1137

Temp: 0.96, Tokens: 102, METEOR: 0.0927

Temp: 0.97, Tokens: 127, METEOR: 0.1108

Temp: 0.94, Tokens: 109, METEOR: 0.0789

Temp: 0.88, Tokens: 137, METEOR: 0.1409

Temp: 0.87, Tokens: 142, METEOR: 0.1198

Temp: 1.00, Tokens: 104, METEOR: 0.0862

Temp: 0.83, Tokens: 127, METEOR: 0.1302

Temp: 0.79, Tokens: 134, METEOR: 0.1408

Temp: 0.81, Tokens: 137, METEOR: 0.1786

Temp: 0.91, Tokens: 141, METEOR: 0.1132

Temp: 1.00, Tokens: 106, METEOR: 0.1166

Temp: 0.84, Tokens: 126, METEOR: 0.1018

Temp: 0.77, Tokens: 137, METEOR: 0.1891

Temp: 0.83, Tokens: 136, METEOR: 0.1243

Temp: 0.94, Tokens: 138, METEOR: 0.1275

Temp: 0.99, Tokens: 108, METEOR: 0.0788

Temp: 0.88, Tokens: 122, METEOR: 0.1229

Temp: 0.89, Tokens: 126, METEOR: 0.1434

Temp: 0.85, Tokens: 128, METEOR: 0.1136

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9946

Max Tokens: 108

METEOR Score: 0.1092

Generated Text:

An acclaimed Bristol bakery has expressed its gratitude to loyal patrons as they announce the re-opening of the establishment following a brief closure due to flooding. “The Baking Bird”, located on North State Street had to cease operations after a pipe burst, flooding its premises on Monday, 9 August at around 7pm. Mercifully, the bakery’s owners informed the public that The Baking Bird would be resuming services next week. Posting a snapshot of their team, including an adorable shop dog, wielding “Open” signs on Facebook,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A popular Co. Galway takeaway has thanked its customers in an update about the business's return after a major incident forced them to close. Earlier this month, fire engines raced to Giovanni's on Main Street in Oranmore after a fire broke out at the Italian takeaway on Wednesday 5 March at around 8pm. Luckily, the business's owners announced that Giovanni's would be reopening this week. The takeaway's Facebook page posted a photo of the staff plus a mini manager of sorts, holding signs saying "OPEN", with the announcement: "After a short break due to a small fire, Giovanni's Takeaway is reopening on Wednesday, 26th March! While we were closed, we took the opportunity to refresh our space with some exciting renovations—come check it out!" "As a thank you for your support, enjoy 10% off your next order with promo code: WEAREBACK10 (valid for a limited time). "We can't wait to welcome you back! See you soon," the announcement ended. Fans of Giovanni's were happy with the news, with one person writing: "Can't wait, nothing beats Giovanni's chips!" Another commenter said: "We missed you!" The post received over one hundred likes in an hour. In other news, a "bold new dining experience" for Galway is being fronted by a talented chef who is bringing elements of "land, fire and sea" to their new restaurant.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this eighteenth test with the Giovanni's reopening announcement, both approaches created parallel business recovery stories while maintaining the local news update style. The manual approach (METEOR: 0.1532) transformed the Italian takeaway into "Shakespeare & Company" bookstore in Florence recovering from water damage instead of fire, though it was cut off at "enjoy 10". The PSO-optimized version (Temperature: 0.9946, Max Tokens: 108, METEOR: 0.1092) reimagined it as "The Baking Bird" bakery in Bristol recovering from flooding, with better originality as shown by the lower METEOR score, though also cut off mid-narrative at "wielding 'Open' signs on Facebook,".

19)

SAMPLE:

One of the county's best-loved businesses will shut its doors in the coming weeks as they say a heartbreaking goodbye to their loyal customers. The beloved retail and coffee shop also shared the reasons behind the difficult decision to shut. Tree Bark Store has served the Moycullen community for seven years but will close their door for the final time on 18 May 2025. The owners explained that they had come upon an opportunity to have a better work/life balance and felt they needed to leap onto it. They added that their regulars may have notice they hadn't been able to spend as much time around the store as they would have liked, and thanked everyone of the years of support and hint at a party to say goodbye near their final day. The heartbreaking post from Tree Bark Store reads: "Work life balance is always a tricky one for small business owners. "We've found ourselves presented with an unexpected opportunity to work far less and enjoy family time much more. "I'm sure our regulars have noticed we haven't been able to spend as much time as we'd usually like in our space the last few months.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1861

Generated New Text:

The cherished local eatery in town, Corner Bistro, announced the tragic news of its impending closure, leaving its patrons in disbelief. The popular restaurant has been a favourite spot for Hartfield residents for the past decade and will bid farewell to its customers with a heavy heart on June 6th, 2026. The owners cited a promising new opportunity that would allow them to balance their professional and personal lives better. Acknowledging that they had been less present at the establishment in recent days, they thanked the community for their unwavering support over the years and hinted at a farewell gathering soon. A poignant announcement from Corner Bistro stated: "For small business owners, achieving a work-life balance can be challenging. We have chanced upon

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

One of the county's best-loved businesses will shut its doors in the coming weeks as they say a heartbreaking goodbye to their loyal customers. The beloved retail and coffee shop also shared the reasons behind the difficult decision to shut. Tree Bark Store has served the Moycullen community for seven years but will close their door for the final time on 18 May 2025. The owners explained that they had come upon an opportunity to have a better work/life balance and felt they needed to leap onto it. They added that their regulars may have notice they hadn't been able to spend as much time around the store as they would have liked, and thanked everyone of the years of support and hint at a party to say goodbye near their final day. The heartbreaking post from Tree Bark Store reads: "Work life balance is always a tricky one for small business owners. "We've found ourselves presented with an unexpected opportunity to work far less and enjoy family time much more. "I'm sure our regulars have noticed we haven't been able to spend as much time as we'd usually like in our space the last few months.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.90, Tokens: 145, METEOR: 0.1746

Temp: 0.72, Tokens: 129, METEOR: 0.1626

Temp: 0.86, Tokens: 110, METEOR: 0.1256

Temp: 0.97, Tokens: 142, METEOR: 0.1862

Temp: 0.89, Tokens: 131, METEOR: 0.1704

Temp: 0.90, Tokens: 124, METEOR: 0.2019

Temp: 0.85, Tokens: 114, METEOR: 0.1594

Temp: 0.79, Tokens: 106, METEOR: 0.1407

Temp: 0.96, Tokens: 147, METEOR: 0.1991

Temp: 0.85, Tokens: 121, METEOR: 0.1568

Temp: 0.88, Tokens: 114, METEOR: 0.1123

Temp: 0.92, Tokens: 106, METEOR: 0.1416

Temp: 0.82, Tokens: 109, METEOR: 0.1311

Temp: 0.96, Tokens: 133, METEOR: 0.1459

Temp: 0.84, Tokens: 114, METEOR: 0.1536

Temp: 0.87, Tokens: 110, METEOR: 0.1128

Temp: 0.94, Tokens: 106, METEOR: 0.1333

Temp: 0.87, Tokens: 113, METEOR: 0.0991

Temp: 0.92, Tokens: 119, METEOR: 0.1282

Temp: 0.84, Tokens: 110, METEOR: 0.1539

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8702

Max Tokens: 113

METEOR Score: 0.1783

Generated Text:

A cherished local institution, the Meadowgreen Bakery, is sadly preparing to close its doors after a decade of serving the community in Westthorpe. The treasured bakery, also renowned for their quality cafe, revealed the reasons behind their impending closure. The proprietors have received an enticing opportunity allowing them a better quality of life, and they felt obligated to seize it. They indicated that their long-standing patrons might have observed their decreased presence in the store recently, and expressed gratitude for the years of support while hinting at a farewell event near their closing date. Their

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

One of the county's best-loved businesses will shut its doors in the coming weeks as they say a heartbreaking goodbye to their loyal customers. The beloved retail and coffee shop also shared the reasons behind the difficult decision to shut. Tree Bark Store has served the Moycullen community for seven years but will close their door for the final time on 18 May 2025. The owners explained that they had come upon an opportunity to have a better work/life balance and felt they needed to leap onto it. They added that their regulars may have notice they hadn't been able to spend as much time around the store as they would have liked, and thanked everyone of the years of support and hint at a party to say goodbye near their final day. The heartbreaking post from Tree Bark Store reads: "Work life balance is always a tricky one for small business owners. "We've found ourselves presented with an unexpected opportunity to work far less and enjoy family time much more. "I'm sure our regulars have noticed we haven't been able to spend as much time as we'd usually like in our space the last few months.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this nineteenth test with the Tree Bark Store closure announcement, both approaches created parallel business closure stories while maintaining the emotional community news style. The manual approach (METEOR: 0.1861) transformed the retail/coffee shop into "Corner Bistro" restaurant in Hartfield closing after a decade, though it was cut off at "We have chanced upon". The PSO-optimized version (Temperature: 0.8702, Max Tokens: 113, METEOR: 0.1783) reimagined it as "Meadowgreen Bakery" in Westthorpe closing for similar work-life balance reasons, and was also cut off at "Their". Both effectively maintained the bittersweet business closure tone with nearly identical METEOR scores, suggesting similar levels of creativity.

20)

SAMPLE:

Rice is one the most versatile foods, pairing well with everything from chicken, beef and fish to curries, stir-fried vegetables and a range of sauces. But, cooking it can sometimes prove to be a bit of a challenge. Common mistakes made when cooking rice include not rinsing the rice properly or not having the right water-to-rice ratio. This can result in undercooked, mushy or dry rice, none of which are particularly pleasant to eat. And even if you do get everything right, you can still end up with a flavourless side dish. Luckily, there's an easy fix. Writing on food blog The Kitchn, expert Emma Christensen shared her favourite ways to make "a boring pot of rice taste amazing". Her first trick to "keep rice flavourful" is to toast the grains. "Toasting the dry rice grains in a little butter or olive oil before adding the water brings out their flavour and adds a fantastic nutty note in the finished dish," she explained. She recommended trying this trick with brown rice or whole grains like barley. Her second tip involved adding just one extra ingredient to the pan during the cooking process. Emma suggested cooking the rice with chicken or vegetable stock, which can either be in the form of leftover homemade stock or a stock cube. She said: "I sometimes find that using 100 percent chicken broth can make the rice feel gummy or overly-starchy," adding: "I usually go for a 50/50 mix of broth and water." "This adds a layer of flavour and richness without going overboard." Her final suggestion was to season the rice with whatever you're already cooking, like the some of the same seasonings you're using for the main dish. The expert urged home cooks to use whole spices for subtle flavours and ground spices for a stand-out dish. She also explained she "almost always" adds a bay leave, regardless of what she's cooking. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our community, you can check out any time you like. If you’re curious, you can read our Privacy Notice.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.0919

Generated New Text:

Pasta is one of the most universally loved foods, easily blending with an array of ingredients including seafood, red meat, poultry, and a sea of flavored sauces. However, cooking it to perfection can be quite the culinary hurdle. Common pitfalls entail incorrect boiling time leading to hard or overcooked, mushy pasta. Even with precise cooking time, you may have a bland meal. Thankfully, food blog Gourmet Ease gives insight courtesy of culinary expert Liam Parker on how to make "an ordinary plate of pasta extraordinary". Liam's initial advice is to season the water. "Salting the boiling water before you add the pasta greatly accentuates the dish's flavor," he notes. He strongly recommends experimenting with this technique using whole wheat or egg pasta. Additionally

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Rice is one the most versatile foods, pairing well with everything from chicken, beef and fish to curries, stir-fried vegetables and a range of sauces. But, cooking it can sometimes prove to be a bit of a challenge. Common mistakes made when cooking rice include not rinsing the rice properly or not having the right water-to-rice ratio. This can result in undercooked, mushy or dry rice, none of which are particularly pleasant to eat. And even if you do get everything right, you can still end up with a flavourless side dish. Luckily, there's an easy fix. Writing on food blog The Kitchn, expert Emma Christensen shared her favourite ways to make "a boring pot of rice taste amazing". Her first trick to "keep rice flavourful" is to toast the grains. "Toasting the dry rice grains in a little butter or olive oil before adding the water brings out their flavour and adds a fantastic nutty note in the finished dish," she explained. She recommended trying this trick with brown rice or whole grains like barley. Her second tip involved adding just one extra ingredient to the pan during the cooking process. Emma suggested cooking the rice with chicken or vegetable stock, which can either be in the form of leftover homemade stock or a stock cube. She said: "I sometimes find that using 100 percent chicken broth can make the rice feel gummy or overly-starchy," adding: "I usually go for a 50/50 mix of broth and water." "This adds a layer of flavour and richness without going overboard." Her final suggestion was to season the rice with whatever you're already cooking, like the some of the same seasonings you're using for the main dish. The expert urged home cooks to use whole spices for subtle flavours and ground spices for a stand-out dish. She also explained she "almost always" adds a bay leave, regardless of what she's cooking. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 134, METEOR: 0.1098

Temp: 1.00, Tokens: 134, METEOR: 0.0617

Temp: 0.83, Tokens: 120, METEOR: 0.0871

Temp: 0.95, Tokens: 110, METEOR: 0.0549

Temp: 0.86, Tokens: 122, METEOR: 0.0631

Temp: 0.85, Tokens: 110, METEOR: 0.0592

Temp: 0.89, Tokens: 115, METEOR: 0.0661

Temp: 0.85, Tokens: 141, METEOR: 0.0742

Temp: 1.00, Tokens: 116, METEOR: 0.0660

Temp: 0.93, Tokens: 100, METEOR: 0.0521

Temp: 0.88, Tokens: 100, METEOR: 0.0718

Temp: 0.89, Tokens: 108, METEOR: 0.0715

Temp: 0.89, Tokens: 137, METEOR: 0.0644

Temp: 1.00, Tokens: 115, METEOR: 0.0632

Temp: 0.97, Tokens: 100, METEOR: 0.0579

Temp: 0.89, Tokens: 100, METEOR: 0.0617

Temp: 0.94, Tokens: 116, METEOR: 0.0577

Temp: 0.92, Tokens: 118, METEOR: 0.0590

Temp: 0.99, Tokens: 108, METEOR: 0.0620

Temp: 0.99, Tokens: 100, METEOR: 0.0631

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9341

Max Tokens: 100

METEOR Score: 0.0550

Generated Text:

Pasta is an incredibly adaptive food, complementing everything from meaty sauces, seafood, crisp vegetables and creamy concoctions. Yet, preparing it requires skill. Typical blunders in pasta cooking include not adding salt to the boiling water or overcooking the noodles, leading to a bland or mushy dish. But don't worry. Gourmet blog Culinary Insight has experienced chef Isabella Rossi sharing her secrets to "elevate a humble pasta dish". She suggests first sautéing the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Rice is one the most versatile foods, pairing well with everything from chicken, beef and fish to curries, stir-fried vegetables and a range of sauces. But, cooking it can sometimes prove to be a bit of a challenge. Common mistakes made when cooking rice include not rinsing the rice properly or not having the right water-to-rice ratio. This can result in undercooked, mushy or dry rice, none of which are particularly pleasant to eat. And even if you do get everything right, you can still end up with a flavourless side dish. Luckily, there's an easy fix. Writing on food blog The Kitchn, expert Emma Christensen shared her favourite ways to make "a boring pot of rice taste amazing". Her first trick to "keep rice flavourful" is to toast the grains. "Toasting the dry rice grains in a little butter or olive oil before adding the water brings out their flavour and adds a fantastic nutty note in the finished dish," she explained. She recommended trying this trick with brown rice or whole grains like barley. Her second tip involved adding just one extra ingredient to the pan during the cooking process. Emma suggested cooking the rice with chicken or vegetable stock, which can either be in the form of leftover homemade stock or a stock cube. She said: "I sometimes find that using 100 percent chicken broth can make the rice feel gummy or overly-starchy," adding: "I usually go for a 50/50 mix of broth and water." "This adds a layer of flavour and richness without going overboard." Her final suggestion was to season the rice with whatever you're already cooking, like the some of the same seasonings you're using for the main dish. The expert urged home cooks to use whole spices for subtle flavours and ground spices for a stand-out dish. She also explained she "almost always" adds a bay leave, regardless of what she's cooking. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twentieth test with the cooking tips article, both approaches created parallel food preparation guides while maintaining the instructional cooking article style. The manual approach (METEOR: 0.0919) transformed rice to pasta cooking tips with expert "Liam Parker" from "Gourmet Ease" offering advice about salting water, though it was cut off at "Additionally". The PSO-optimized version (Temperature: 0.9341, Max Tokens: 100, METEOR: 0.0550) also created pasta cooking advice with chef "Isabella Rossi" from "Culinary Insight," achieving exceptional originality as shown by the very low METEOR score, though it was cut off even earlier at "She suggests first sautéing the".

21)

SAMPLE:

A popular Galway cafe has paid tribute to its owner after celebrating 33 years in business today. Goyas of Galway on Kirwan's Lane is known as one of the city's top spots for a bite to eat or to order the perfect cake or desert for life's special occasions. What started out as a small bakery has, over time evolved into a business that bakes and cooks each day using local ingredients where possible. Read more: Dedicated Galway woman praised as 'total hero' for Connemara goodwill gesture Goyas stated on social media today that the lady behind it all is Emer Murray, who opened the business on 1 March 1991. "So many thousands of memories, smiles, bakes, cakes and challenges along the way and she wouldn't change a thing about it," they said. Click this link to receive breaking news and top stories from Galway Beo to WhatsApp. We also treat our community members to special offers, promotions, and adverts from us and our partners.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1371

Generated New Text:

A cherished Dublin bookstore is celebrating its 40th anniversary in service today. The Book Haven on O'Connell Street is recognised as one of the capital's leading destinations for bookworms and students alike. Initially opened as a small, quaint book shack, it has steadily transformed into a successful business that sources and sells an astonishing variety of books, insisting on an eclectic mix of both local and international authors. This transformed hub of literature is the brainchild of Timothy Casey, who established it on 15th April 1981. "Through the chapters of countless books, smiles of numerous customers and countless challenges, he wouldn't have it any other way," the management shared. For handpicked news and bestseller recommendations, subscribe to our WhatsApp channel.

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A popular Galway cafe has paid tribute to its owner after celebrating 33 years in business today. Goyas of Galway on Kirwan's Lane is known as one of the city's top spots for a bite to eat or to order the perfect cake or desert for life's special occasions. What started out as a small bakery has, over time evolved into a business that bakes and cooks each day using local ingredients where possible. Read more: Dedicated Galway woman praised as 'total hero' for Connemara goodwill gesture Goyas stated on social media today that the lady behind it all is Emer Murray, who opened the business on 1 March 1991. "So many thousands of memories, smiles, bakes, cakes and challenges along the way and she wouldn't change a thing about it," they said. Click this link to receive breaking news and top stories from Galway Beo to WhatsApp. We also treat our community members to special offers, promotions, and adverts from us and our partners.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.89, Tokens: 134, METEOR: 0.1462

Temp: 0.75, Tokens: 128, METEOR: 0.2015

Temp: 0.89, Tokens: 114, METEOR: 0.1456

Temp: 0.71, Tokens: 126, METEOR: 0.2388

Temp: 0.89, Tokens: 108, METEOR: 0.1443

Temp: 0.87, Tokens: 150, METEOR: 0.1462

Temp: 0.70, Tokens: 112, METEOR: 0.1316

Temp: 0.70, Tokens: 132, METEOR: 0.1776

Temp: 0.77, Tokens: 139, METEOR: 0.1415

Temp: 0.91, Tokens: 106, METEOR: 0.2025

Temp: 0.81, Tokens: 142, METEOR: 0.1557

Temp: 0.70, Tokens: 104, METEOR: 0.1240

Temp: 0.70, Tokens: 135, METEOR: 0.1841

Temp: 0.78, Tokens: 140, METEOR: 0.1352

Temp: 0.92, Tokens: 106, METEOR: 0.1236

Temp: 0.82, Tokens: 124, METEOR: 0.2581

Temp: 0.75, Tokens: 101, METEOR: 0.1152

Temp: 0.77, Tokens: 125, METEOR: 0.2481

Temp: 0.78, Tokens: 136, METEOR: 0.1266

Temp: 0.85, Tokens: 105, METEOR: 0.1049

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8461

Max Tokens: 105

METEOR Score: 0.1622

Generated Text:

A celebrated Bristol bookstore is honouring its founder on its 40th anniversary. Blackwell’s of Bristol on Victoria Street has been recognized as one of the city's favourite places for book lovers to find a hidden gem or the latest best seller. Originally a tiny corner shop, it has evolved into a thriving business that supports local authors when possible. Blackwell’s expressed gratitude on social media to their visionary founder, Arthur Blackwell, who started the business on 15 July 1981. "Countless stories, smiles,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A popular Galway cafe has paid tribute to its owner after celebrating 33 years in business today. Goyas of Galway on Kirwan's Lane is known as one of the city's top spots for a bite to eat or to order the perfect cake or desert for life's special occasions. What started out as a small bakery has, over time evolved into a business that bakes and cooks each day using local ingredients where possible. Read more: Dedicated Galway woman praised as 'total hero' for Connemara goodwill gesture Goyas stated on social media today that the lady behind it all is Emer Murray, who opened the business on 1 March 1991. "So many thousands of memories, smiles, bakes, cakes and challenges along the way and she wouldn't change a thing about it," they said. Click this link to receive breaking news and top stories from Galway Beo to WhatsApp. We also treat our community members to special offers, promotions, and adverts from us and our partners.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-first test with the Goyas cafe anniversary article, both approaches created parallel business anniversary stories while maintaining the celebratory local news style. The manual approach (METEOR: 0.1371) transformed the cafe into "The Book Haven" bookstore in Dublin celebrating 40 years with founder Timothy Casey, achieving good originality and creating a complete story with parallel structure to the original. The PSO-optimized version (Temperature: 0.8461, Max Tokens: 105, METEOR: 0.1622) also reimagined the business as a bookstore, "Blackwell's of Bristol," though it was cut off at "Countless stories, smiles,". Both effectively maintained the positive, congratulatory tone of the community business milestone.

22)

SAMPLE:

Five top hotels from across Galway were recognised with awards at Virgin Media Business Gold Medal Awards ceremony at The Galmont Hotel & Spa this week. The awards ceremony, which took place on Tuesday night at the stunning 4-star hotel in Galway city, was hosted by Anton Savage and saw the Galmont bag a prize of its own. MHL Hotel Group, which owns the Galmont Hotel, the Harbour Hotel and Glenlo Abbey, was awarded the title of Ireland's Best Hotel Group. It also owns several prestigious hotels in Dublin and Limerick as well as the Powerscourt Hotel Resort. Renvyle House Hotel and Resort won the top prize in the Ireland’s Four Star Resort category and shared a jubilant message to their social media followers shortly after the ceremony. "Thank you to our lovely guests for your continued support and to our amazing team at Renvyle House, it takes everyone to arrive at this achievement. We are absolutely thrilled with this recognition," the post read. Glenlo Abbey Hotel & Estate had a double whammy of a night when they won the gold prize for Ireland’s Five Star Guest Experience and the silver prizefor Ireland’s Grand Wedding Hotel. The 5-star estate on the shores of Lough Corrib is a top spot for weddings, thanks in part to the allure of the Pullman Restaurant, which is comprised of two former carriages from the Orient Express.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1762

Generated New Text:

A selection of fine dining establishments in Edinburgh received accolades at the Virgin Media Business Food Excellence Awards held at the majestic Balmoral Hotel this weekend. The award ceremony was held on Saturday evening at the famous 5-star hotel and was hosted by popular food critic, Oliver Smith. The Balmoral Hotel did not miss out on the winning streak, securing an award themselves. The renowned Elliot's Restaurant Group, owners of the Balmoral Hotel, Scott's Brasserie and the historic Bell Tower Bistro, won the coveted title of Scotland's Best Restaurant Group. The Group also owns prestigious restaurants in Glasgow and Aberdeen. Fraoch Lodge Gourmet Retreat was awarded the top prize in the Scotland's Five Star Culinary Experience category. They expressed their el

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Five top hotels from across Galway were recognised with awards at Virgin Media Business Gold Medal Awards ceremony at The Galmont Hotel & Spa this week. The awards ceremony, which took place on Tuesday night at the stunning 4-star hotel in Galway city, was hosted by Anton Savage and saw the Galmont bag a prize of its own. MHL Hotel Group, which owns the Galmont Hotel, the Harbour Hotel and Glenlo Abbey, was awarded the title of Ireland's Best Hotel Group. It also owns several prestigious hotels in Dublin and Limerick as well as the Powerscourt Hotel Resort. Renvyle House Hotel and Resort won the top prize in the Ireland's Four Star Resort category and shared a jubilant message to their social media followers shortly after the ceremony. "Thank you to our lovely guests for your continued support and to our amazing team at Renvyle House, it takes everyone to arrive at this achievement. We are absolutely thrilled with this recognition," the post read. Glenlo Abbey Hotel & Estate had a double whammy of a night when they won the gold prize for Ireland's Five Star Guest Experience and the silver prizefor Ireland's Grand Wedding Hotel. The 5-star estate on the shores of Lough Corrib is a top spot for weddings, thanks in part to the allure of the Pullman Restaurant, which is comprised of two former carriages from the Orient Express.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.99, Tokens: 101, METEOR: 0.0808

Temp: 0.93, Tokens: 102, METEOR: 0.1037

Temp: 0.98, Tokens: 119, METEOR: 0.1287

Temp: 0.93, Tokens: 112, METEOR: 0.1118

Temp: 0.80, Tokens: 146, METEOR: 0.1632

Temp: 0.99, Tokens: 113, METEOR: 0.0851

Temp: 1.00, Tokens: 104, METEOR: 0.1014

Temp: 1.00, Tokens: 140, METEOR: 0.1598

Temp: 1.00, Tokens: 122, METEOR: 0.0895

Temp: 0.93, Tokens: 145, METEOR: 0.1653

Temp: 0.99, Tokens: 113, METEOR: 0.0874

Temp: 1.00, Tokens: 104, METEOR: 0.0852

Temp: 1.00, Tokens: 141, METEOR: 0.1431

Temp: 1.00, Tokens: 118, METEOR: 0.1301

Temp: 0.98, Tokens: 139, METEOR: 0.1112

Temp: 0.99, Tokens: 103, METEOR: 0.1361

Temp: 1.00, Tokens: 103, METEOR: 0.1033

Temp: 1.00, Tokens: 121, METEOR: 0.1100

Temp: 1.00, Tokens: 109, METEOR: 0.1013

Temp: 1.00, Tokens: 126, METEOR: 0.1189

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9878

Max Tokens: 101

METEOR Score: 0.0899

Generated Text:

Esteemed restaurants from across Sydney earned accolades at the Australian Culinary Excellence Awards held at the lavish Grand Rialto Ballroom this weekend. The gala, taking place on Saturday evening in the heart of Sydney, was emceed by renowned chef Gordon Ramsay, presenting an award to the Grand Rialto, among others. The group owning the venue, High Cuisine Creators, who also own the Harbour Eatery and Cherrydale Kitchen, were named Australia's Best Restaurant Group, having establishments in Melbourne

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Five top hotels from across Galway were recognised with awards at Virgin Media Business Gold Medal Awards ceremony at The Galmont Hotel & Spa this week. The awards ceremony, which took place on Tuesday night at the stunning 4-star hotel in Galway city, was hosted by Anton Savage and saw the Galmont bag a prize of its own. MHL Hotel Group, which owns the Galmont Hotel, the Harbour Hotel and Glenlo Abbey, was awarded the title of Ireland's Best Hotel Group. It also owns several prestigious hotels in Dublin and Limerick as well as the Powerscourt Hotel Resort. Renvyle House Hotel and Resort won the top prize in the Ireland's Four Star Resort category and shared a jubilant message to their social media followers shortly after the ceremony. "Thank you to our lovely guests for your continued support and to our amazing team at Renvyle House, it takes everyone to arrive at this achievement. We are absolutely thrilled with this recognition," the post read. Glenlo Abbey Hotel & Estate had a double whammy of a night when they won the gold prize for Ireland's Five Star Guest Experience and the silver prizefor Ireland's Grand Wedding Hotel. The 5-star estate on the shores of Lough Corrib is a top spot for weddings, thanks in part to the allure of the Pullman Restaurant, which is comprised of two former carriages from the Orient Express.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-second test with the Galway hotels award story, both approaches created parallel award ceremony narratives while maintaining the celebratory news style. The manual approach (METEOR: 0.1762) transformed the hotel awards into the "Virgin Media Business Food Excellence Awards" in Edinburgh featuring restaurants instead of hotels, with similar business group structure and award categories. The PSO-optimized version (Temperature: 0.9878, Max Tokens: 101, METEOR: 0.0899) achieved excellent originality by reimagining the scenario as the "Australian Culinary Excellence Awards" in Sydney with Gordon Ramsay as host, though it was cut off at "having establishments in Melbourne".

23)

SAMPLE:

Planning permission has been granted for the construction of 14 residential units in Oranmore in Co. Galway. Applicants David and Sally Jordan appealed to An Bord Pleanála after the development plans had originally been rejected by Galway County Council. The site is located on Bog Road, with the development description reading: "(1) The construction of 14 no. residential units in 1 no. two and a half storey block, comprising of 5 no. 1 bed ground floor own door apartments, 2 no. 2 bed ground floor own door apartments, with 3 no. 2 bed own door duplex units and 4 no. 3 bed own door duplex units over. "(2) Connection to existing public mains water supply and public sewer, together with on-site surface water drainage. (3) Provision of public and private open spaces, bin storage, bicycle parking & site landscaping and (4) Provision for pedestrian and vehicular connection onto Bog road. "(5) Car parking (including provision for EV spaces), site signage, boundary treatments together with all associated site works and services. A Natura Impact Statement will be submitted to the planning authority with this application. "Gross floor space of proposed works: 1,382.00 sqm." The plans for the site had originally been rejected due to “the location of the proposed connection into the foul sewer network on Bog Road and the location where it is proposed to cross under the Carrowmoneash River." However, An Bord Pleanála have decided to grant permission, stating: "In deciding not to accept the Inspector's recommendation to refuse permission, the Board determined, in accordance with Section 34(4)(a)(i) of the Planning and Development Act 2000, as amended, to permit the proposed development because the permissions/advice obtained from Galway County Council and Uisce Eireann confirmed the applicant’s legal interest over and under the adjoining lands to make the required foul sewer connections.” It remains unknown as to when construction will begin or the date of completion, according to the Irish Independent. In related news, Galway County Council announced yesterday the construction of 44 affordable houses in Athenry. The Local Authority signed contracts with Studio PKA (Paul Keogh Architects) for the designs of two housing schemes in Athenry on Monday (April 28). It will see the construction of 28 homes at Raheen and 16 at Páirc na hAbhainn. Join Galway Beo’s top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our community, you can check out any time you like. If you’re curious, you can read our Privacy Notice.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.0815

Generated New Text:

Approval has been given for the building of a state-of-the-art library in the heart of Clifden, Co. Galway. The application put forward by Edward and Emily O'Brien was initially dismissed by Galway County Council, leading to their appeal to An Bord Pleanála. The location is on Bridge Street, and the project entails "the erection of a multi-functional library with a café, a local history section, a youth section, an adult section, and a digital resource center in a three-story building. It includes plans for underground and street level parking, a pedestrian roadway, a water supply and sewage connection, and associated works." The original denial was on the grounds of "the proposed bridge underpass to the parking spaces and conflict

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Planning permission has been granted for the construction of 14 residential units in Oranmore in Co. Galway. Applicants David and Sally Jordan appealed to An Bord Pleanála after the development plans had originally been rejected by Galway County Council. The site is located on Bog Road, with the development description reading: "(1) The construction of 14 no. residential units in 1 no. two and a half storey block, comprising of 5 no. 1 bed ground floor own door apartments, 2 no. 2 bed ground floor own door apartments, with 3 no. 2 bed own door duplex units and 4 no. 3 bed own door duplex units over. "(2) Connection to existing public mains water supply and public sewer, together with on-site surface water drainage. (3) Provision of public and private open spaces, bin storage, bicycle parking & site landscaping and (4) Provision for pedestrian and vehicular connection onto Bog road. "(5) Car parking (including provision for EV spaces), site signage, boundary treatments together with all associated site works and services. A Natura Impact Statement will be submitted to the planning authority with this application. "Gross floor space of proposed works: 1,382.00 sqm." The plans for the site had originally been rejected due to "the location of the proposed connection into the foul sewer network on Bog Road and the location where it is proposed to cross under the Carrowmoneash River." However, An Bord Pleanála have decided to grant permission, stating: "In deciding not to accept the Inspector's recommendation to refuse permission, the Board determined, in accordance with Section 34(4)(a)(i) of the Planning and Development Act 2000, as amended, to permit the proposed development because the permissions/advice obtained from Galway County Council and Uisce Eireann confirmed the applicant's legal interest over and under the adjoining lands to make the required foul sewer connections." It remains unknown as to when construction will begin or the date of completion, according to the Irish Independent. In related news, Galway County Council announced yesterday the construction of 44 affordable houses in Athenry. The Local Authority signed contracts with Studio PKA (Paul Keogh Architects) for the designs of two housing schemes in Athenry on Monday (April 28). It will see the construction of 28 homes at Raheen and 16 at Páirc na hAbhainn. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.82, Tokens: 129, METEOR: 0.0745

Temp: 0.83, Tokens: 129, METEOR: 0.0780

Temp: 0.74, Tokens: 138, METEOR: 0.0864

Temp: 0.88, Tokens: 134, METEOR: 0.0721

Temp: 0.92, Tokens: 146, METEOR: 0.0953

Temp: 0.88, Tokens: 142, METEOR: 0.0792

Temp: 0.81, Tokens: 118, METEOR: 0.0601

Temp: 0.82, Tokens: 150, METEOR: 0.0932

Temp: 0.78, Tokens: 124, METEOR: 0.0800

Temp: 0.98, Tokens: 150, METEOR: 0.0645

Temp: 0.90, Tokens: 131, METEOR: 0.0826

Temp: 0.80, Tokens: 113, METEOR: 0.0527

Temp: 0.83, Tokens: 145, METEOR: 0.0923

Temp: 0.77, Tokens: 114, METEOR: 0.0635

Temp: 0.96, Tokens: 144, METEOR: 0.0827

Temp: 0.85, Tokens: 123, METEOR: 0.0612

Temp: 0.79, Tokens: 110, METEOR: 0.0736

Temp: 0.80, Tokens: 140, METEOR: 0.0742

Temp: 0.77, Tokens: 109, METEOR: 0.0540

Temp: 0.88, Tokens: 132, METEOR: 0.0841

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7965

Max Tokens: 113

METEOR Score: 0.0588

Generated Text:

Approval has been given for the development of a 20-unit commercial plaza in Ballina, Co. Mayo. The proposal from applicants John and Laura Doyle faced initial opposition from Mayo County Council but was later accepted by An Bord Pleanála. The new complex will rise on Harbour Road, featuring "20 commercial units spread over a three-story edifice, complete with underground parking, public amenities, and green spaces." The project, totalling 2,300 sqm in gross floor space, will also provide fully equipped bicycle stations and an eco-friendly rainwater harvesting

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Planning permission has been granted for the construction of 14 residential units in Oranmore in Co. Galway. Applicants David and Sally Jordan appealed to An Bord Pleanála after the development plans had originally been rejected by Galway County Council. The site is located on Bog Road, with the development description reading: "(1) The construction of 14 no. residential units in 1 no. two and a half storey block, comprising of 5 no. 1 bed ground floor own door apartments, 2 no. 2 bed ground floor own door apartments, with 3 no. 2 bed own door duplex units and 4 no. 3 bed own door duplex units over. "(2) Connection to existing public mains water supply and public sewer, together with on-site surface water drainage. (3) Provision of public and private open spaces, bin storage, bicycle parking & site landscaping and (4) Provision for pedestrian and vehicular connection onto Bog road. "(5) Car parking (including provision for EV spaces), site signage, boundary treatments together with all associated site works and services. A Natura Impact Statement will be submitted to the planning authority with this application. "Gross floor space of proposed works: 1,382.00 sqm." The plans for the site had originally been rejected due to "the location of the proposed connection into the foul sewer network on Bog Road and the location where it is proposed to cross under the Carrowmoneash River." However, An Bord Pleanála have decided to grant permission, stating: "In deciding not to accept the Inspector's recommendation to refuse permission, the Board determined, in accordance with Section 34(4)(a)(i) of the Planning and Development Act 2000, as amended, to permit the proposed development because the permissions/advice obtained from Galway County Council and Uisce Eireann confirmed the applicant's legal interest over and under the adjoining lands to make the required foul sewer connections." It remains unknown as to when construction will begin or the date of completion, according to the Irish Independent. In related news, Galway County Council announced yesterday the construction of 44 affordable houses in Athenry. The Local Authority signed contracts with Studio PKA (Paul Keogh Architects) for the designs of two housing schemes in Athenry on Monday (April 28). It will see the construction of 28 homes at Raheen and 16 at Páirc na hAbhainn. Join Galway Beo's top stories and breaking news service on WhatsApp. Click this link to receive breaking news and the latest headlines direct to your phone. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our community, you can check out any time you like. If you're curious, you can read our Privacy Notice.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-third test with the planning permission article, both approaches created parallel development approval stories while maintaining the formal planning announcement style. The manual approach (METEOR: 0.0815) transformed the residential units into a library in Clifden with similar planning obstacles, though it was cut off at "the proposed bridge underpass to the parking spaces and conflict". The PSO-optimized version (Temperature: 0.7965, Max Tokens: 113, METEOR: 0.0588) achieved excellent originality by reimagining the project as a commercial plaza in Ballina, Co. Mayo with similar approval process and technical details, though it was also cut off at "eco-friendly rainwater harvesting".

24)

SAMPLE:

A punter has been left fuming after seeing his bill in a Galway city centre pub this week. The Twitter user had been in the Quays Bar on Quay Lane and wasn't very happy with the cost of his two drinks... or should we say one and a half. The drinks in question were the popular Italian beer Birra Morretti and a half-pint of Coors Light, according to the receipt he shared online. Read more: Galway leads way at Irish Restaurant Awards stealing best pub, hotel and cafe crowns "€12.00 for pint & glass?," the man wrote "€4.50 for a glass of Coors light€4.50?! A glass and not even a decent glass... I pity the bar staff having to charge these prices," he added. Click this link to receive breaking news and top stories from Galway Beo to WhatsApp. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don’t like our group, you can check out any time you like. If you’re curious, you can read our Privacy Notice. He must have been raging as it took him only ten minutes from when the receipt was printed for him to have the post on Twitter.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1771

Generated New Text:

A customer was left visibly irked after receiving his tab at Manchester's Central Pub this weekend. The Facebook user had been to The Tavern on Market Street and was unsatisfied with his spending on a couple of beverages - or shall we say, one and three-quarters. The beverages under spotlight were a famous German beer, Paulaner Munchner Hell, and a smaller glass of Budweiser, as per the bill snapshot he aired on the internet. "£14.00 for ale & goblet?," the man vented "£5.00 for a goblet of Budweiser£5.00?! A goblet and not even a good one... I feel sorry the waiting staff compelled to enforce these prices," he continued.

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A punter has been left fuming after seeing his bill in a Galway city centre pub this week. The Twitter user had been in the Quays Bar on Quay Lane and wasn't very happy with the cost of his two drinks... or should we say one and a half. The drinks in question were the popular Italian beer Birra Morretti and a half-pint of Coors Light, according to the receipt he shared online. Read more: Galway leads way at Irish Restaurant Awards stealing best pub, hotel and cafe crowns "€12.00 for pint & glass?," the man wrote "€4.50 for a glass of Coors light€4.50?! A glass and not even a decent glass... I pity the bar staff having to charge these prices," he added. Click this link to receive breaking news and top stories from Galway Beo to WhatsApp. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our group, you can check out any time you like. If you're curious, you can read our Privacy Notice. He must have been raging as it took him only ten minutes from when the receipt was printed for him to have the post on Twitter.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 1.00, Tokens: 139, METEOR: 0.2144

Temp: 0.82, Tokens: 139, METEOR: 0.2725

Temp: 0.98, Tokens: 122, METEOR: 0.1511

Temp: 0.76, Tokens: 119, METEOR: 0.2160

Temp: 0.87, Tokens: 135, METEOR: 0.1349

Temp: 1.00, Tokens: 136, METEOR: 0.1973

Temp: 0.92, Tokens: 137, METEOR: 0.2503

Temp: 0.84, Tokens: 137, METEOR: 0.1725

Temp: 0.81, Tokens: 119, METEOR: 0.1722

Temp: 1.00, Tokens: 138, METEOR: 0.1321

Temp: 1.00, Tokens: 135, METEOR: 0.1685

Temp: 0.98, Tokens: 136, METEOR: 0.2035

Temp: 0.86, Tokens: 144, METEOR: 0.2186

Temp: 0.90, Tokens: 125, METEOR: 0.1534

Temp: 1.00, Tokens: 139, METEOR: 0.2177

Temp: 1.00, Tokens: 136, METEOR: 0.1331

Temp: 1.00, Tokens: 136, METEOR: 0.1909

Temp: 0.91, Tokens: 145, METEOR: 0.1928

Temp: 0.95, Tokens: 132, METEOR: 0.1824

Temp: 1.00, Tokens: 139, METEOR: 0.2171

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9973

Max Tokens: 138

METEOR Score: 0.1531

Generated Text:

A shopper expressed outrage after seeing the price tag on an item of clothing at a Dublin city centre boutique. The Facebook user had been browsing the trendy clothing store, Urban Chic, on Dublin's Drury Street and was far from pleased with the cost of her singular purchase. The clothing item was the latest seasonal blouse and according to the tag, it was marked at an exorbitant price. She wrote on her post "€108.00 for a single piece of cloth?" She further added, "I do sympathize with the store staff who have to justify such prices". Sign up to receive the latest news about Dublin's shopping trends and deals on your WhatsApp. You'll also get exclusive

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A punter has been left fuming after seeing his bill in a Galway city centre pub this week. The Twitter user had been in the Quays Bar on Quay Lane and wasn't very happy with the cost of his two drinks... or should we say one and a half. The drinks in question were the popular Italian beer Birra Morretti and a half-pint of Coors Light, according to the receipt he shared online. Read more: Galway leads way at Irish Restaurant Awards stealing best pub, hotel and cafe crowns "€12.00 for pint & glass?," the man wrote "€4.50 for a glass of Coors light€4.50?! A glass and not even a decent glass... I pity the bar staff having to charge these prices," he added. Click this link to receive breaking news and top stories from Galway Beo to WhatsApp. We also treat our community members to special offers, promotions, and adverts from us and our partners. If you don't like our group, you can check out any time you like. If you're curious, you can read our Privacy Notice. He must have been raging as it took him only ten minutes from when the receipt was printed for him to have the post on Twitter.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-fourth test with the pub bill complaint, both approaches created parallel consumer grievance stories while maintaining the outraged social media post style. The manual approach (METEOR: 0.1771) transformed the pub scenario to "The Tavern" in Manchester with similar price complaints about different beers and achieved a complete, coherent story without mid-sentence cutoffs. The PSO-optimized version (Temperature: 0.9973, Max Tokens: 138, METEOR: 0.1531) demonstrated more creativity by switching to a clothing purchase at Dublin's "Urban Chic" boutique, maintaining the price complaint theme but changing the context entirely, though it was cut off at "You'll also get exclusive".

25)

SAMPLE:

Galwegians have been left in disgust after one local shared photographs and a story of an incident along a busy tourist area of the city. The post reports that as they walked along the River Corrib in Galway city the concerned local saw three empty lifebuoy stands, suggesting a person or persons threw the life rings in the river or took them away. The images of an empty lifebuoy stand and a life ring floating in a Galway city canal were shared with strong words: "I hope whoever did this is proud of themselves. Three life buoys thrown into the canal. Gobs\*\*\*es."

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2223

Generated New Text:

New Yorkers are expressing outrage after a resident posted photos and an account of an occurrence in a popular visitor segment of the city. The post relates how, during a stroll around Central Park Lake, the worried New Yorker observed several broken benches, indicating that someone had either vandalized them or had stolen parts. The images of the damaged park furniture and approximately scattered fragments were posted with a pointed comment: "I trust whoever is responsible for this feels accomplished. Multiple park benches ruined. Utterly irresponsible."

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Galwegians have been left in disgust after one local shared photographs and a story of an incident along a busy tourist area of the city. The post reports that as they walked along the River Corrib in Galway city the concerned local saw three empty lifebuoy stands, suggesting a person or persons threw the life rings in the river or took them away. The images of an empty lifebuoy stand and a life ring floating in a Galway city canal were shared with strong words: "I hope whoever did this is proud of themselves. Three life buoys thrown into the canal. Gobs\*\*\*es."

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.85, Tokens: 109, METEOR: 0.2312

Temp: 0.83, Tokens: 123, METEOR: 0.1786

Temp: 0.90, Tokens: 142, METEOR: 0.2609

Temp: 0.82, Tokens: 118, METEOR: 0.1891

Temp: 0.72, Tokens: 146, METEOR: 0.2509

Temp: 0.81, Tokens: 122, METEOR: 0.1542

Temp: 0.71, Tokens: 117, METEOR: 0.2178

Temp: 0.94, Tokens: 118, METEOR: 0.2791

Temp: 0.78, Tokens: 129, METEOR: 0.2834

Temp: 0.90, Tokens: 123, METEOR: 0.1972

Temp: 0.78, Tokens: 129, METEOR: 0.1884

Temp: 0.74, Tokens: 116, METEOR: 0.2286

Temp: 0.88, Tokens: 116, METEOR: 0.1857

Temp: 0.78, Tokens: 132, METEOR: 0.2119

Temp: 0.96, Tokens: 111, METEOR: 0.2166

Temp: 0.78, Tokens: 130, METEOR: 0.2276

Temp: 0.81, Tokens: 119, METEOR: 0.2024

Temp: 0.84, Tokens: 116, METEOR: 0.2733

Temp: 0.80, Tokens: 128, METEOR: 0.1872

Temp: 0.94, Tokens: 106, METEOR: 0.2288

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8077

Max Tokens: 122

METEOR Score: 0.2107

Generated Text:

Residents of Brighton were appalled when a local posted images and a narrative of an event in a popular visitor hotspot in town. The Brighton Pier was the crime scene where the local spotted multiple vandalized benches, indicating that someone either broke them or took parts away. The photos of the damaged benches and splintered wood scattered around the Brighton Pier were posted with a scathing comment: "The individuals responsible for this should be ashamed. Several benches destroyed in a senseless act. Absolute idiots."

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Galwegians have been left in disgust after one local shared photographs and a story of an incident along a busy tourist area of the city. The post reports that as they walked along the River Corrib in Galway city the concerned local saw three empty lifebuoy stands, suggesting a person or persons threw the life rings in the river or took them away. The images of an empty lifebuoy stand and a life ring floating in a Galway city canal were shared with strong words: "I hope whoever did this is proud of themselves. Three life buoys thrown into the canal. Gobs\*\*\*es."

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-fifth test with the lifebuoy vandalism story, both approaches created parallel public vandalism narratives while maintaining the outraged community response style. The manual approach (METEOR: 0.2223) transformed the lifebuoy incident to broken benches in Central Park, New York, maintaining the same structure and tone with similarly outraged commentary. The PSO-optimized version (Temperature: 0.8077, Max Tokens: 122, METEOR: 0.2107) relocated the scenario to Brighton Pier with damaged benches, achieving a slightly better originality score and creating a complete story without mid-sentence cutoffs.

26)

SAMPLE:

Christmas is here and as the festive spirit spreads across the county, each Galway town is setting up for the most magical time of the year. The Christmas market in Galway city might be the most famous event of the season, but it is not the only one. Around the county, many towns have been organising lovely markets and exciting events for both adults and children. Kinvara is definitely ready for Christmas as only in this small colourful town you will find a Christmas fair, lovely lights and even a truck run. The Kinvara Christmas fair will take place in Kinvara community centre on Saturday December 7, Sunday December 8, and then again on Saturday December 14 and Sunday December 15. If you want your Christmas presents to be Irish and unique then you cannot miss the Oranmore Christmas Fair. The fair will take place on Saturday December 7 at Oranmore community centre and will host over 35 unique local businesses from 4pm to 8pm. The second day will take place on December 8 from 10am to 2pm.Expect a fantastic lineup of artisans, crafters and local businesses. From handcrafted ornaments to scrumptious treats, unique gifts, and heartwarming decorations, there's something for everyone to explore and enjoy.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1559

Generated New Text:

Easter is upon us and with the atmosphere of renewal sweeping through each Dublin borough, they're all preparing for this jubilant time of the year. Dublin city's Easter parade may be a beloved event, but it hardly stands alone. All around the area, vibrant festivities and delightful activities for all ages are being arranged. Phibsboro is certainly geared up for Easter, with this lively suburb featuring an Easter fair, charming decorations, and even a classic car show. The Phibsboro Easter fair will take place at the local community center on April 10 and 11, then again on April 17 and 18. For those searching for uniquely Irish Easter gifts, the Rathmines Easter Fair is a must-visit. This fair will

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Christmas is here and as the festive spirit spreads across the county, each Galway town is setting up for the most magical time of the year. The Christmas market in Galway city might be the most famous event of the season, but it is not the only one. Around the county, many towns have been organising lovely markets and exciting events for both adults and children. Kinvara is definitely ready for Christmas as only in this small colourful town you will find a Christmas fair, lovely lights and even a truck run. The Kinvara Christmas fair will take place in Kinvara community centre on Saturday December 7, Sunday December 8, and then again on Saturday December 14 and Sunday December 15. If you want your Christmas presents to be Irish and unique then you cannot miss the Oranmore Christmas Fair. The fair will take place on Saturday December 7 at Oranmore community centre and will host over 35 unique local businesses from 4pm to 8pm. The second day will take place on December 8 from 10am to 2pm.Expect a fantastic lineup of artisans, crafters and local businesses. From handcrafted ornaments to scrumptious treats, unique gifts, and heartwarming decorations, there's something for everyone to explore and enjoy.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.75, Tokens: 122, METEOR: 0.1547

Temp: 0.94, Tokens: 116, METEOR: 0.1551

Temp: 0.91, Tokens: 106, METEOR: 0.1130

Temp: 0.89, Tokens: 131, METEOR: 0.1634

Temp: 0.84, Tokens: 115, METEOR: 0.1081

Temp: 0.89, Tokens: 122, METEOR: 0.1804

Temp: 0.87, Tokens: 132, METEOR: 0.1777

Temp: 0.86, Tokens: 100, METEOR: 0.1668

Temp: 1.00, Tokens: 120, METEOR: 0.1053

Temp: 0.78, Tokens: 113, METEOR: 0.2686

Temp: 0.98, Tokens: 121, METEOR: 0.2150

Temp: 0.87, Tokens: 136, METEOR: 0.1371

Temp: 0.85, Tokens: 100, METEOR: 0.1058

Temp: 1.00, Tokens: 115, METEOR: 0.1865

Temp: 0.77, Tokens: 114, METEOR: 0.1712

Temp: 0.95, Tokens: 120, METEOR: 0.1056

Temp: 0.88, Tokens: 131, METEOR: 0.1501

Temp: 0.87, Tokens: 102, METEOR: 0.1179

Temp: 1.00, Tokens: 114, METEOR: 0.1398

Temp: 0.89, Tokens: 115, METEOR: 0.1450

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9993

Max Tokens: 120

METEOR Score: 0.1679

Generated Text:

Autumn is upon us and as the season of harvest spreads across the province, each township in Somerset is preparing for the most bountiful time of the year. The pumpkin festival in the city of Bridgwater may be the headline attraction, but throughout the province, many communities are organising lively fairs and engaging activities for all age groups. For instance, Taunton is undoubtedly geared up for autumn with a county fair, beautiful decorations, and even a tractor parade. The Taunton Harvest Festival will be held at the community hall on Saturday October 12 and Sunday October 13, and

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Christmas is here and as the festive spirit spreads across the county, each Galway town is setting up for the most magical time of the year. The Christmas market in Galway city might be the most famous event of the season, but it is not the only one. Around the county, many towns have been organising lovely markets and exciting events for both adults and children. Kinvara is definitely ready for Christmas as only in this small colourful town you will find a Christmas fair, lovely lights and even a truck run. The Kinvara Christmas fair will take place in Kinvara community centre on Saturday December 7, Sunday December 8, and then again on Saturday December 14 and Sunday December 15. If you want your Christmas presents to be Irish and unique then you cannot miss the Oranmore Christmas Fair. The fair will take place on Saturday December 7 at Oranmore community centre and will host over 35 unique local businesses from 4pm to 8pm. The second day will take place on December 8 from 10am to 2pm.Expect a fantastic lineup of artisans, crafters and local businesses. From handcrafted ornaments to scrumptious treats, unique gifts, and heartwarming decorations, there's something for everyone to explore and enjoy.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-sixth test with the Galway Christmas events story, both approaches created parallel seasonal festival stories while maintaining the promotional event listing style. The manual approach (METEOR: 0.1559) transformed the Christmas markets to Easter events in Dublin, shifting to different neighborhoods (Phibsboro and Rathmines) with similar event formats, though it was cut off at "This fair will". The PSO-optimized version (Temperature: 0.9993, Max Tokens: 120, METEOR: 0.1679) reimagined the scenario as autumn harvest festivals in Somerset, England, with Taunton replacing Kinvara, maintaining the same promotional structure though similarly cut off at "and".

27)

SAMPLE:

A beach just outside Galway city has been named as being among the top 5 best beaches in Ireland in a new survey which ranked sites by average temperature, rainfall and 'Instagrammability'. Silverstrand Beach in Barna achieved a score of 288 out of 300, coming fourth overall, in the survey compiled by the Lagoon Activity Centre in West Cork. The top three sea swimming beaches in Ireland, according to the study, are Killiney in Co. Dublin, Inch Beach in Co. Kerry, and Portmarnock Beach, also in Co. Dublin. Salthill, Loughrea Lake and Achill Island's Keem Bay and Keel Beach, respectively, were also featured in the top 25. Silverstrand is known for its crystal-clear waters, golden sands, and great views of Galway Bay and the Clare hills. The beach stretches for about 300 meters in a distinctive “Horseshoe” shape. The sheltered bay makes it a calm spot for swimming, as the water is relatively calm and protected from the harsher waves of the open ocean. Despite it's beauty, you might not find many others there depending on the time of day.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2141

Generated New Text:

A park situated in the heart of Dublin city has been recognized as one of the top five parks in Ireland in a recent evaluation which rated locations based on tranquillity, accessibility, and 'sociability'. The Phoenix Park in Dublin scored 290 out of 300, landing third overall, in the survey conducted by the Woodland Activity Centre in East Galway. The two most relaxing parks in Ireland, according to the survey, are Glendalough in Co. Wicklow, Botanic Gardens in Belfast, and finally Phoenix park. Other noteworthy mentions include St. Stephen's Green, Killarney National Park, and Powerscourt Gardens, which all found their spots in the top 20. Phoenix Park is renowned for its lush greenery

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A beach just outside Galway city has been named as being among the top 5 best beaches in Ireland in a new survey which ranked sites by average temperature, rainfall and 'Instagrammability'. Silverstrand Beach in Barna achieved a score of 288 out of 300, coming fourth overall, in the survey compiled by the Lagoon Activity Centre in West Cork. The top three sea swimming beaches in Ireland, according to the study, are Killiney in Co. Dublin, Inch Beach in Co. Kerry, and Portmarnock Beach, also in Co. Dublin. Salthill, Loughrea Lake and Achill Island's Keem Bay and Keel Beach, respectively, were also featured in the top 25. Silverstrand is known for its crystal-clear waters, golden sands, and great views of Galway Bay and the Clare hills. The beach stretches for about 300 meters in a distinctive "Horseshoe" shape. The sheltered bay makes it a calm spot for swimming, as the water is relatively calm and protected from the harsher waves of the open ocean. Despite it's beauty, you might not find many others there depending on the time of day.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.79, Tokens: 116, METEOR: 0.1960

Temp: 0.80, Tokens: 124, METEOR: 0.2067

Temp: 0.92, Tokens: 118, METEOR: 0.1516

Temp: 0.74, Tokens: 145, METEOR: 0.2374

Temp: 0.79, Tokens: 111, METEOR: 0.2060

Temp: 0.75, Tokens: 134, METEOR: 0.2102

Temp: 0.98, Tokens: 113, METEOR: 0.1596

Temp: 0.87, Tokens: 137, METEOR: 0.1537

Temp: 0.79, Tokens: 126, METEOR: 0.1513

Temp: 0.82, Tokens: 110, METEOR: 0.2028

Temp: 0.76, Tokens: 139, METEOR: 0.2467

Temp: 1.00, Tokens: 114, METEOR: 0.1731

Temp: 0.84, Tokens: 138, METEOR: 0.1694

Temp: 0.82, Tokens: 116, METEOR: 0.1694

Temp: 0.82, Tokens: 115, METEOR: 0.1670

Temp: 0.77, Tokens: 139, METEOR: 0.1641

Temp: 1.00, Tokens: 116, METEOR: 0.1712

Temp: 0.83, Tokens: 131, METEOR: 0.1845

Temp: 0.82, Tokens: 120, METEOR: 0.1662

Temp: 0.81, Tokens: 119, METEOR: 0.1677

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7920

Max Tokens: 126

METEOR Score: 0.1704

Generated Text:

A park nestled within the bustling city of Chicago has been recognized as one of the top 5 urban parks in the US in a recent survey. The parameters for ranking included average sunlight, greenery, and 'Instagrammability'. Lincoln Park, with a score of 275 out of 300, claimed the fifth position in the survey conducted by the Urban Green Space Institute in San Francisco. The top three parks, as per the study, are Central Park in New York, Golden Gate Park in San Francisco, and Grant Park in Chicago. Other parks like Millennium Park, Belle Isle Park and Boston's Public Garden also figured in the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A beach just outside Galway city has been named as being among the top 5 best beaches in Ireland in a new survey which ranked sites by average temperature, rainfall and 'Instagrammability'. Silverstrand Beach in Barna achieved a score of 288 out of 300, coming fourth overall, in the survey compiled by the Lagoon Activity Centre in West Cork. The top three sea swimming beaches in Ireland, according to the study, are Killiney in Co. Dublin, Inch Beach in Co. Kerry, and Portmarnock Beach, also in Co. Dublin. Salthill, Loughrea Lake and Achill Island's Keem Bay and Keel Beach, respectively, were also featured in the top 25. Silverstrand is known for its crystal-clear waters, golden sands, and great views of Galway Bay and the Clare hills. The beach stretches for about 300 meters in a distinctive "Horseshoe" shape. The sheltered bay makes it a calm spot for swimming, as the water is relatively calm and protected from the harsher waves of the open ocean. Despite it's beauty, you might not find many others there depending on the time of day.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In this twenty-seventh test with the beach ranking story, both approaches created parallel tourist attraction ranking stories while maintaining the rating report style. The manual approach (METEOR: 0.2141) transformed the beach ranking to Irish parks with Phoenix Park achieving third place, replacing measurement criteria with "tranquillity, accessibility, and 'sociability'," though it was cut off at "renowned for its lush greenery". The PSO-optimized version (Temperature: 0.7920, Max Tokens: 126, METEOR: 0.1704) reimagined the concept as American urban parks with Lincoln Park in Chicago ranked fifth, achieving better originality while maintaining the structure of rankings, criteria, and featured locations, though similarly cut off at "also figured in the".

28)

SAMPLE:

Supermac's boss Pat McDonagh has called for a common sense decision to be made that will help the hospitality sector across the country. The program for Government has confirmed that they will reduce the VAT rate for hospitality from 13.5% to 9% by the next budget. Now, Pat McDonagh has called for the reduction to be introduced immediately calling it a "common-sense decision" for the hospitality sector. The Government had planned to reduce the rate at the next budget but Mr McDonagh is urging the Government not to wait that long as too many livelihoods will be lost between now and budget day. Fine Gael, Fianna Fail and The Regional Independent Group have also made commitments to reduce the cost of childcare in the lifetime of the next Government. They plan on doing this "progressively" over the next five years. There are also other plans to help hard-up parents with the cost of childcare over the next five years. The new Government will try to buy or build state-run childcare facilities and also plan to make creche fees more transparent for parents.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1643

Generated New Text:

Chef Marco Bellini has advocated for a tactical move that will invigorate the struggling restaurant industry all over the nation. The latest Administrative plan has made it clear that they intend to slash the restaurant tax from 15% to 10% in the forthcoming fiscal year. However, Marco Bellini is pushing for the implementation of this action sooner than planned, labeling it a "strategic approach" for the restaurant industry. The Administration initially planned to enact this offer at the upcoming fiscal year, but Mr. Bellini is pressuring them to act swiftly as countless jobs stand to be jeopardized during the interim. The Liberal Democrats, Conservatives, and The Green Party have also pledged to curtail the expenses related to elderly care during the term of the approaching

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Supermac's boss Pat McDonagh has called for a common sense decision to be made that will help the hospitality sector across the country. The program for Government has confirmed that they will reduce the VAT rate for hospitality from 13.5% to 9% by the next budget. Now, Pat McDonagh has called for the reduction to be introduced immediately calling it a "common-sense decision" for the hospitality sector. The Government had planned to reduce the rate at the next budget but Mr McDonagh is urging the Government not to wait that long as too many livelihoods will be lost between now and budget day. Fine Gael, Fianna Fail and The Regional Independent Group have also made commitments to reduce the cost of childcare in the lifetime of the next Government. They plan on doing this "progressively" over the next five years. There are also other plans to help hard-up parents with the cost of childcare over the next five years. The new Government will try to buy or build state-run childcare facilities and also plan to make creche fees more transparent for parents.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.95, Tokens: 116, METEOR: 0.1486

Temp: 1.00, Tokens: 115, METEOR: 0.1384

Temp: 0.77, Tokens: 135, METEOR: 0.1765

Temp: 0.89, Tokens: 114, METEOR: 0.1183

Temp: 0.80, Tokens: 127, METEOR: 0.1429

Temp: 0.83, Tokens: 133, METEOR: 0.1731

Temp: 1.00, Tokens: 121, METEOR: 0.1125

Temp: 0.79, Tokens: 124, METEOR: 0.1468

Temp: 0.93, Tokens: 118, METEOR: 0.1409

Temp: 0.89, Tokens: 126, METEOR: 0.1293

Temp: 0.85, Tokens: 131, METEOR: 0.1892

Temp: 1.00, Tokens: 124, METEOR: 0.1550

Temp: 0.82, Tokens: 119, METEOR: 0.1452

Temp: 0.96, Tokens: 121, METEOR: 0.1488

Temp: 0.96, Tokens: 125, METEOR: 0.1377

Temp: 0.93, Tokens: 122, METEOR: 0.1633

Temp: 1.00, Tokens: 124, METEOR: 0.1699

Temp: 0.86, Tokens: 117, METEOR: 0.1264

Temp: 0.96, Tokens: 121, METEOR: 0.1068

Temp: 0.97, Tokens: 125, METEOR: 0.1377

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9633

Max Tokens: 121

METEOR Score: 0.1353

Generated Text:

Papa John's CEO, Steve Ritchie, is urging legislators to make a practical decision that will boost the retail industry throughout the nation. In the Government's agenda, it's confirmed that the current sales tax for retail items at 6% would be cut down to 4% in the following fiscal year. Now, Steve Ritchie is advocating for an immediate implementation of the cut, describing it as a "practical decision" for the retail sector. Although the Government initially aimed to enact the tax cut at the next fiscal year, Ritchie urges the higher-ups not to delay as it may lead

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Supermac's boss Pat McDonagh has called for a common sense decision to be made that will help the hospitality sector across the country. The program for Government has confirmed that they will reduce the VAT rate for hospitality from 13.5% to 9% by the next budget. Now, Pat McDonagh has called for the reduction to be introduced immediately calling it a "common-sense decision" for the hospitality sector. The Government had planned to reduce the rate at the next budget but Mr McDonagh is urging the Government not to wait that long as too many livelihoods will be lost between now and budget day. Fine Gael, Fianna Fail and The Regional Independent Group have also made commitments to reduce the cost of childcare in the lifetime of the next Government. They plan on doing this "progressively" over the next five years. There are also other plans to help hard-up parents with the cost of childcare over the next five years. The new Government will try to buy or build state-run childcare facilities and also plan to make creche fees more transparent for parents.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

I'll analyze the provided code snippet and its outputs.

In this example, two approaches to generating creative text inspired by original content are compared. The manual approach without PSO achieved a METEOR score of 0.1643, creating a parallel narrative about Chef Marco Bellini advocating for restaurant tax reduction. The PSO-optimized version (Temperature: 0.9633, Max Tokens: 121, METEOR: 0.1353) transformed the story into Papa John's CEO Steve Ritchie urging for retail sales tax cuts. Both approaches successfully maintained the original format of a business leader advocating for immediate tax reduction to help their industry, but the manual approach actually achieved a better METEOR score than the PSO-optimized version, suggesting that the particle swarm optimization might not have improved performance in this particular case despite the computational effort invested in parameter tuning.

29)

SAMPLE:

Gardai have issued a safety warning to fans travelling to this weekend's Connacht Senior Football Championship semi-final. Galway takes on Roscommon this Sunday in Pearse Stadium with thousands of fans expected to travel to the game in Salthill. Because of this, heavy traffic is expected on roads to Galway and in and around Salthill. Supporters of both counties are being advised to get to the ground early to avoid any delays in entering the stadium. Gates at Pearse Stadium will open at 2:30pm. Supporters who are driving to the game have been advised to use car parks in Salthill or the city centre and walk to the stadium or use public transport. There will be car parking available on the grounds of St Enda's College and motorists have been advised to park legally and responsibly. A garda spokesperson said: "The Connacht Senior Football Championship semi-final between Galway and Roscommon will take place in Pearse Stadium at 4pm on Sunday, 20th April, 2025. With up to 15,000 people expected to attend the match, there will be increased traffic on approach roads to Galway and in the Salthill area. Supporters are urged to arrive early in order to avoid traffic congestion and potential delays entering Pearse Stadium.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1760

Generated New Text:

Police have issued a public advisory for visitors attending this weekend's North Western Basketball League quarterfinals. Portland will be playing against Seattle in the Moda Center this Saturday; a gathering of numerous fans is predicted. This implies a likely surge in Portland-bound traffic and within the city. Attendees from both cities are advised to arrive early to circumvent entrance delays. The gates at Moda Center open at 6:00pm. Fans driving to the event are encouraged to park in downtown Portland or use public transportation. Parking will be available in the vicinity of Grant High School; however, drivers ought to park legally. A police representative stated, "The basketball match between Portland and Seattle is scheduled at the Moda Center at 7:30pm this

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Gardai have issued a safety warning to fans travelling to this weekend's Connacht Senior Football Championship semi-final. Galway takes on Roscommon this Sunday in Pearse Stadium with thousands of fans expected to travel to the game in Salthill. Because of this, heavy traffic is expected on roads to Galway and in and around Salthill. Supporters of both counties are being advised to get to the ground early to avoid any delays in entering the stadium. Gates at Pearse Stadium will open at 2:30pm. Supporters who are driving to the game have been advised to use car parks in Salthill or the city centre and walk to the stadium or use public transport. There will be car parking available on the grounds of St Enda's College and motorists have been advised to park legally and responsibly. A garda spokesperson said: "The Connacht Senior Football Championship semi-final between Galway and Roscommon will take place in Pearse Stadium at 4pm on Sunday, 20th April, 2025. With up to 15,000 people expected to attend the match, there will be increased traffic on approach roads to Galway and in the Salthill area. Supporters are urged to arrive early in order to avoid traffic congestion and potential delays entering Pearse Stadium."

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.73, Tokens: 148, METEOR: 0.2703

Temp: 0.74, Tokens: 114, METEOR: 0.2213

Temp: 0.85, Tokens: 111, METEOR: 0.1468

Temp: 0.99, Tokens: 108, METEOR: 0.1534

Temp: 0.78, Tokens: 140, METEOR: 0.1941

Temp: 0.82, Tokens: 150, METEOR: 0.1895

Temp: 0.80, Tokens: 100, METEOR: 0.1287

Temp: 0.91, Tokens: 108, METEOR: 0.1339

Temp: 0.92, Tokens: 108, METEOR: 0.1642

Temp: 0.88, Tokens: 106, METEOR: 0.1596

Temp: 0.87, Tokens: 134, METEOR: 0.2530

Temp: 0.82, Tokens: 100, METEOR: 0.1193

Temp: 0.93, Tokens: 103, METEOR: 0.1467

Temp: 0.85, Tokens: 105, METEOR: 0.1215

Temp: 0.90, Tokens: 100, METEOR: 0.1367

Temp: 0.86, Tokens: 120, METEOR: 0.1288

Temp: 0.84, Tokens: 100, METEOR: 0.1736

Temp: 0.91, Tokens: 103, METEOR: 0.1266

Temp: 0.80, Tokens: 101, METEOR: 0.1546

Temp: 0.90, Tokens: 100, METEOR: 0.1262

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8239

Max Tokens: 100

METEOR Score: 0.1424

Generated Text:

The Metropolitan Police have alerted cricket enthusiasts planning to attend the Grundy County Cricket semi-finals this weekend. London competes against Yorkshire this Sunday at the iconic Lord's Cricket Ground, with a high influx of supporters anticipated. Potential traffic congestion is predicted on the routes to London and surrounding St. John's Wood area. Fans of both teams are urged to arrive at the venue ahead of time to prevent any entrance delays. Lord's gates will swing open at 9:30 am. Those driving to the match

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Gardai have issued a safety warning to fans travelling to this weekend's Connacht Senior Football Championship semi-final. Galway takes on Roscommon this Sunday in Pearse Stadium with thousands of fans expected to travel to the game in Salthill. Because of this, heavy traffic is expected on roads to Galway and in and around Salthill. Supporters of both counties are being advised to get to the ground early to avoid any delays in entering the stadium. Gates at Pearse Stadium will open at 2:30pm. Supporters who are driving to the game have been advised to use car parks in Salthill or the city centre and walk to the stadium or use public transport. There will be car parking available on the grounds of St Enda's College and motorists have been advised to park legally and responsibly. A garda spokesperson said: "The Connacht Senior Football Championship semi-final between Galway and Roscommon will take place in Pearse Stadium at 4pm on Sunday, 20th April, 2025. With up to 15,000 people expected to attend the match, there will be increased traffic on approach roads to Galway and in the Salthill area. Supporters are urged to arrive early in order to avoid traffic congestion and potential delays entering Pearse Stadium."

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the twenty-ninth test with the Garda football match traffic advisory, both approaches successfully transformed the safety notice while maintaining the official warning tone and structure, with the manual approach (METEOR: 0.1760) converting the Irish football match into a North Western Basketball League quarterfinal between Portland and Seattle, while the PSO-optimized version (Temperature: 0.8239, Max Tokens: 100, METEOR: 0.1424) reimagined it as a cricket match at Lord's Cricket Ground. Both outputs suffered from incomplete final sentences due to token limitations, though the PSO version achieved better originality with its lower METEOR score despite being shorter than the manual version.

30)

SAMPLE:

Connacht Rugby are set to play at MacHale Park in Castlebar – the home of Mayo GAA – next year as they host an interprovincial clash with Munster on Saturday 29 March. The deal, which was given the go-ahead by the GAA's Central Council earlier this month, will see Connacht become the fourth and last provincial rugby team in Ireland to play a game at intercounty GAA grounds in their province. Connacht Rugby has hailed the development as "a historic sporting occasion for the province of Connacht" as Mayo host a competitive Connacht Rugby fixture for the first time in the Professional era. The MacHale Park setting will also "provide supporters from all five counties with a unique opportunity to attend a vital URC fixture in the heart of the province". Tickets go on general sale on Monday 13 January, with early access from Friday 10 January for those who register their interest at connachtrugby.ie/castlebar. Tickets start from just €20 for an adult, €15 for a young adult/senior, and €5 for juniors, while all season tickets will be valid for the game. Kickoff is at 2.30pm.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2262

Generated New Text:

For the first time, Carrara Stadium – the home of Australian Rules Football – will witness a thrilling Super Rugby clash between Queensland Reds and Melbourne Rebels on 9th April. Queensland Rugby Union and the Australian Football League sanctioned this historic event this week, positioning Queensland as the final Australian state to host a Super Rugby match in an AFL venue. The landmark occasion has been touted as "an unprecedented sporting event for Queensland's sports history." Queensland Rugby fans will be able to enjoy this crucial Super Rugby match in the heart of their state for the first time. Tickets will be on sale from 20th March, with a pre-sale opportunity for those who register at queenslandreds.com.au/carrara. Starting prices are AUD30 for an adult, AUD

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Connacht Rugby are set to play at MacHale Park in Castlebar – the home of Mayo GAA – next year as they host an interprovincial clash with Munster on Saturday 29 March. The deal, which was given the go-ahead by the GAA's Central Council earlier this month, will see Connacht become the fourth and last provincial rugby team in Ireland to play a game at intercounty GAA grounds in their province. Connacht Rugby has hailed the development as "a historic sporting occasion for the province of Connacht" as Mayo host a competitive Connacht Rugby fixture for the first time in the Professional era. The MacHale Park setting will also "provide supporters from all five counties with a unique opportunity to attend a vital URC fixture in the heart of the province". Tickets go on general sale on Monday 13 January, with early access from Friday 10 January for those who register their interest at connachtrugby.ie/castlebar. Tickets start from just €20 for an adult, €15 for a young adult/senior, and €5 for juniors, while all season tickets will be valid for the game. Kickoff is at 2.30pm.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.94, Tokens: 104, METEOR: 0.1720

Temp: 0.78, Tokens: 135, METEOR: 0.1570

Temp: 0.93, Tokens: 121, METEOR: 0.1825

Temp: 0.96, Tokens: 131, METEOR: 0.1678

Temp: 0.99, Tokens: 144, METEOR: 0.1738

Temp: 0.92, Tokens: 100, METEOR: 0.1489

Temp: 0.75, Tokens: 128, METEOR: 0.1809

Temp: 0.94, Tokens: 127, METEOR: 0.2235

Temp: 1.00, Tokens: 111, METEOR: 0.1434

Temp: 0.86, Tokens: 150, METEOR: 0.2396

Temp: 0.94, Tokens: 100, METEOR: 0.1439

Temp: 0.76, Tokens: 125, METEOR: 0.1727

Temp: 0.96, Tokens: 122, METEOR: 0.1484

Temp: 1.00, Tokens: 101, METEOR: 0.1081

Temp: 0.82, Tokens: 134, METEOR: 0.1964

Temp: 0.97, Tokens: 100, METEOR: 0.1565

Temp: 0.79, Tokens: 126, METEOR: 0.1936

Temp: 0.97, Tokens: 116, METEOR: 0.1324

Temp: 1.00, Tokens: 100, METEOR: 0.1674

Temp: 0.89, Tokens: 129, METEOR: 0.1349

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 101

METEOR Score: 0.1433

Generated Text:

Waterford Football Club is all set to make its debut at Nowlan Park in Kilkenny – a remarkable GAA location – this spring as they arrange a vital match with Shamrock Rovers on Sunday 7 May. The union was approved by the GAA's executive committee early this year, thus allowing Waterford FC to be the final football team in Ireland to stage a game at major GAA venues in their respective region. Waterford FC considers this progression as "a momentous day for the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Connacht Rugby are set to play at MacHale Park in Castlebar – the home of Mayo GAA – next year as they host an interprovincial clash with Munster on Saturday 29 March. The deal, which was given the go-ahead by the GAA's Central Council earlier this month, will see Connacht become the fourth and last provincial rugby team in Ireland to play a game at intercounty GAA grounds in their province. Connacht Rugby has hailed the development as "a historic sporting occasion for the province of Connacht" as Mayo host a competitive Connacht Rugby fixture for the first time in the Professional era. The MacHale Park setting will also "provide supporters from all five counties with a unique opportunity to attend a vital URC fixture in the heart of the province". Tickets go on general sale on Monday 13 January, with early access from Friday 10 January for those who register their interest at connachtrugby.ie/castlebar. Tickets start from just €20 for an adult, €15 for a young adult/senior, and €5 for juniors, while all season tickets will be valid for the game. Kickoff is at 2.30pm.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirtieth test with the Connacht Rugby stadium event announcement, both approaches successfully created parallel sporting event narratives while preserving the professional announcement format and essential structural elements. The manual approach (METEOR: 0.2262) transposed the Irish rugby fixture to an Australian Rules Football venue hosting the Queensland Reds versus Melbourne Rebels Super Rugby match, maintaining similar historical significance themes but with higher similarity to the original text. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 101, METEOR: 0.1433) reimagined the scenario with Waterford Football Club playing at Nowlan Park against Shamrock Rovers, achieving significantly better originality as shown by the lower METEOR score despite being cut off mid-sentence due to token limitations.

31)

SAMPLE:

Talks are underway for a major boxing match to be held in Pearse Stadium between a heavyweight champion and the cousin of Tyson Fury. Hughie Fury, the 30-year-old cousin of former world heavyweight champion boxer Tyson, is understood to be set to fight Dillian Whyte at the home of Galway GAA. Fury hasn't announced any fights for 2025 yet, after three wins last year, but it's believed that a date in late July is planned for the Galway fight. He would be taking on Whyte, a Jamaican-British professional boxer who has formerly competed as a kickboxer and mixed martial artist. Whyte was born in Jamaica but his family emigrated to London when he was 12. His paternal grandfather was an Irishman named Patrick Whyte, who hailed from Dublin. 36 year old Whyte is believed to be a frontrunner for the 'Thrill in Salthill'. Whyte had 31 wins and 3 losses, compared to Fury's 29 and 3. Before the Pearse Stadium fight can get underway however, just like Galway GAA, Fury must prove himself in New York. Fury will be fighting Dan Garber on Friday night, just a few miles from where Galway and New York GAA will face off on Sunday at 3pm local time. The match will start at 8pm Irish time and is the Connacht Senior Championship opener.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1193

Generated New Text:

In a bid to revive the yesteryears’ baseball glory in the city, negotiations have started for a monumental game at Seattle Stadium between current home-run champion and Mark McGwire's nephew, James McGwire. James, a 30-year-old power hitter, whose uncle Mark is a former Major League Baseball home-run record holder, is expected to compete against prolific outfielder Benjamin Shaw at home-base of the Seattle Mariners. While the official stat line of 2025 hasn't seen any entries yet for McGwire, insiders are suggesting a game scheduled for late August with Shaw. Shaw, an American professional baseball player of Jamaican and British descent, had earlier played in the Minor Leagues and the Major Leagues. Born in Kingston, Jamaica,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Talks are underway for a major boxing match to be held in Pearse Stadium between a heavyweight champion and the cousin of Tyson Fury. Hughie Fury, the 30-year-old cousin of former world heavyweight champion boxer Tyson, is understood to be set to fight Dillian Whyte at the home of Galway GAA. Fury hasn't announced any fights for 2025 yet, after three wins last year, but it's believed that a date in late July is planned for the Galway fight. He would be taking on Whyte, a Jamaican-British professional boxer who has formerly competed as a kickboxer and mixed martial artist. Whyte was born in Jamaica but his family emigrated to London when he was 12. His paternal grandfather was an Irishman named Patrick Whyte, who hailed from Dublin. 36 year old Whyte is believed to be a frontrunner for the 'Thrill in Salthill'. Whyte had 31 wins and 3 losses, compared to Fury's 29 and 3. Before the Pearse Stadium fight can get underway however, just like Galway GAA, Fury must prove himself in New York. Fury will be fighting Dan Garber on Friday night, just a few miles from where Galway and New York GAA will face off on Sunday at 3pm local time. The match will start at 8pm Irish time and is the Connacht Senior Championship opener.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.95, Tokens: 118, METEOR: 0.1063

Temp: 0.91, Tokens: 121, METEOR: 0.1130

Temp: 0.72, Tokens: 130, METEOR: 0.1732

Temp: 0.96, Tokens: 136, METEOR: 0.1708

Temp: 0.79, Tokens: 142, METEOR: 0.2139

Temp: 0.97, Tokens: 137, METEOR: 0.1582

Temp: 0.85, Tokens: 135, METEOR: 0.1223

Temp: 0.70, Tokens: 108, METEOR: 0.1403

Temp: 1.00, Tokens: 150, METEOR: 0.1760

Temp: 0.96, Tokens: 146, METEOR: 0.1266

Temp: 0.96, Tokens: 135, METEOR: 0.1467

Temp: 0.85, Tokens: 140, METEOR: 0.1480

Temp: 0.70, Tokens: 102, METEOR: 0.0947

Temp: 0.99, Tokens: 139, METEOR: 0.1270

Temp: 0.91, Tokens: 133, METEOR: 0.1696

Temp: 0.94, Tokens: 118, METEOR: 0.1038

Temp: 0.86, Tokens: 135, METEOR: 0.1388

Temp: 0.70, Tokens: 100, METEOR: 0.1094

Temp: 0.91, Tokens: 116, METEOR: 0.1594

Temp: 0.87, Tokens: 127, METEOR: 0.1337

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7000

Max Tokens: 102

METEOR Score: 0.1109

Generated Text:

Negotiations are ongoing for a significant tennis showdown to take place at Centre Court Wimbledon, between a Grand Slam champion and the sibling of Serena Williams. Venus Williams, the 41-year-old sister of legendary tennis player Serena, is reportedly preparing to challenge Maria Sharapova at the heart of English tennis. Williams hasn't revealed her match schedule for 2025 yet, following a triumphant last season, but it's suspected that a match in early August is on the cards. She would be facing Sharap

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Talks are underway for a major boxing match to be held in Pearse Stadium between a heavyweight champion and the cousin of Tyson Fury. Hughie Fury, the 30-year-old cousin of former world heavyweight champion boxer Tyson, is understood to be set to fight Dillian Whyte at the home of Galway GAA. Fury hasn't announced any fights for 2025 yet, after three wins last year, but it's believed that a date in late July is planned for the Galway fight. He would be taking on Whyte, a Jamaican-British professional boxer who has formerly competed as a kickboxer and mixed martial artist. Whyte was born in Jamaica but his family emigrated to London when he was 12. His paternal grandfather was an Irishman named Patrick Whyte, who hailed from Dublin. 36 year old Whyte is believed to be a frontrunner for the 'Thrill in Salthill'. Whyte had 31 wins and 3 losses, compared to Fury's 29 and 3. Before the Pearse Stadium fight can get underway however, just like Galway GAA, Fury must prove himself in New York. Fury will be fighting Dan Garber on Friday night, just a few miles from where Galway and New York GAA will face off on Sunday at 3pm local time. The match will start at 8pm Irish time and is the Connacht Senior Championship opener.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-first test with the boxing match announcement, both approaches successfully transformed the sporting event narrative while preserving the journalistic style and key structural elements. The manual approach (METEOR: 0.1193) reimagined the boxing match as a baseball showdown between James McGwire (nephew of Mark McGwire) and Benjamin Shaw at Seattle Stadium, effectively maintaining family connection elements while changing the sport entirely. The PSO-optimized version (Temperature: 0.7000, Max Tokens: 102, METEOR: 0.1109) creatively shifted to a tennis context featuring Venus Williams versus Maria Sharapova at Wimbledon, achieving a slightly better originality score despite using the lowest possible temperature setting in the search range and being cut off mid-sentence due to token limitations.

32)

SAMPLE:

A former Galway county councillor has hit out at a decision by the county GAA board to exclusively use pre-bought tickets and card payments at the gates of upcoming fixtures this weekend. Galway GAA's "cashless policy" is ill-thought out, according to former Tuam councillor for Fianna Fáil Joe Sheridan. The campaigner and sustainability consultant shared the news that cash will not be accepted at the gates from this week onward. Saturday 12 October and Sunday 13 October will both be huge days for Gaelic games in the county, with over twenty matches of various age groups between hurling and football taking place. Joe shared the announcement to his Facebook page, writing: "Talk about a silly and ill-thought-out move by our county board." "Please show your support to our older stock of GAA supporters by sharing this message and by contacting your club secretary to voice your dislike of this cashless strategy in our local and county GAA family." Galway GAA made the announcement on Monday, stating that GAA fans would need to choose from three options to attend matches. They could purchase a ticket online, use a Contactless Card payment at the grounds on the day or buy tickets in advance from 13 participating Supervalu stores and 10 Centras across the county.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1840

Generated New Text:

A previous Buenos Aires city council member has heavily criticized the city's football association for their recent decision to only accept pre-purchased tickets and card payments at all upcoming matches this weekend. The city's football association's "cash-free stance" is poorly planned, says former Recoleta councilman for the Justicialist Party, Carlos Herrera. The activist and urban development specialist publicly objected to the news that physical cash would be rejected at the stadium doors from here on out. The upcoming weekend will see a rush of football activity across the city with over thirty games scheduled between various age groups and clubs. Carlos posted his criticism on his Twitter page, stating: "Such a misguided decision by our city’s football association." "Let’s rally in support of our long

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A former Galway county councillor has hit out at a decision by the county GAA board to exclusively use pre-bought tickets and card payments at the gates of upcoming fixtures this weekend. Galway GAA's "cashless policy" is ill-thought out, according to former Tuam councillor for Fianna Fáil Joe Sheridan. The campaigner and sustainability consultant shared the news that cash will not be accepted at the gates from this week onward. Saturday 12 October and Sunday 13 October will both be huge days for Gaelic games in the county, with over twenty matches of various age groups between hurling and football taking place. Joe shared the announcement to his Facebook page, writing: "Talk about a silly and ill-thought-out move by our county board." "Please show your support to our older stock of GAA supporters by sharing this message and by contacting your club secretary to voice your dislike of this cashless strategy in our local and county GAA family." Galway GAA made the announcement on Monday, stating that GAA fans would need to choose from three options to attend matches. They could purchase a ticket online, use a Contactless Card payment at the grounds on the day or buy tickets in advance from 13 participating Supervalu stores and 10 Centras across the county.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.78, Tokens: 102, METEOR: 0.1415

Temp: 0.82, Tokens: 129, METEOR: 0.1596

Temp: 0.78, Tokens: 104, METEOR: 0.0879

Temp: 0.93, Tokens: 139, METEOR: 0.1429

Temp: 0.92, Tokens: 146, METEOR: 0.1630

Temp: 0.90, Tokens: 100, METEOR: 0.1179

Temp: 0.95, Tokens: 101, METEOR: 0.1711

Temp: 0.93, Tokens: 101, METEOR: 0.0855

Temp: 1.00, Tokens: 124, METEOR: 0.1095

Temp: 0.83, Tokens: 143, METEOR: 0.1402

Temp: 0.97, Tokens: 100, METEOR: 0.1089

Temp: 0.97, Tokens: 100, METEOR: 0.0979

Temp: 1.00, Tokens: 100, METEOR: 0.0953

Temp: 1.00, Tokens: 116, METEOR: 0.0974

Temp: 0.80, Tokens: 133, METEOR: 0.1064

Temp: 1.00, Tokens: 100, METEOR: 0.0703

Temp: 0.99, Tokens: 100, METEOR: 0.1149

Temp: 1.00, Tokens: 100, METEOR: 0.0927

Temp: 1.00, Tokens: 112, METEOR: 0.0928

Temp: 0.82, Tokens: 114, METEOR: 0.1101

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 100

METEOR Score: 0.0980

Generated Text:

A former Barcelona city councillor has expressed her disappointment at a recent decision by the city's management board to only use online reservations and digital payments for upcoming city events. Barcelona City's "cashless rule" seems poorly conceived, says former democrat party representative Tania Sanchez. The human rights advocate and urban planning professional divulged the concerning information that cash payments won't be entertained at city events moving forward. The week of 5th-12th June will be a vibrant period for the city, filled with

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A former Galway county councillor has hit out at a decision by the county GAA board to exclusively use pre-bought tickets and card payments at the gates of upcoming fixtures this weekend. Galway GAA's "cashless policy" is ill-thought out, according to former Tuam councillor for Fianna Fáil Joe Sheridan. The campaigner and sustainability consultant shared the news that cash will not be accepted at the gates from this week onward. Saturday 12 October and Sunday 13 October will both be huge days for Gaelic games in the county, with over twenty matches of various age groups between hurling and football taking place. Joe shared the announcement to his Facebook page, writing: "Talk about a silly and ill-thought-out move by our county board." "Please show your support to our older stock of GAA supporters by sharing this message and by contacting your club secretary to voice your dislike of this cashless strategy in our local and county GAA family." Galway GAA made the announcement on Monday, stating that GAA fans would need to choose from three options to attend matches. They could purchase a ticket online, use a Contactless Card payment at the grounds on the day or buy tickets in advance from 13 participating Supervalu stores and 10 Centras across the county.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-second test with the Galway GAA cashless policy story, both approaches effectively transformed the original content while maintaining the news article format about a controversial policy change. The manual approach (METEOR: 0.1840) relocated the scenario to Buenos Aires, replacing Irish GAA with the city's football association and transforming Joe Sheridan into Carlos Herrera from the Justicialist Party, though it was cut off while describing the public appeal. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 100, METEOR: 0.0980) achieved significantly better originality by shifting to Barcelona city events with Tania Sanchez as the critical former councillor, evidenced by a METEOR score almost half that of the manual version despite using maximum temperature settings. Both versions maintained key structural elements including the politician's criticism, policy details, and upcoming event information, though both suffered from incomplete final sentences due to token limitations.

33)

SAMPLE:

Galway GAA fans are in New York en masse for the Connacht Senior Football Championship quarter-final in the Bronx this weekend. Galway face New York in the Gaelic Grounds in New York City on Sunday 6 April, with a throw-in time of 3pm local (8pm Irish time), but the Tribes' support arrived a little early to make their presence known. Galway's Connacht Senior Football Championship away journey is a little further than usual, but it's the first hurdle on the way to Croke Park and a professional job is needed. And so, thousands of the maroon faithful made their pilgrimage to New York, and were spotted at landmarks and iconic New York spots in the build-up to the notable tie. Three Galway fans were roped into a very Irish sing-song on the streets of New York. The 2 Johnnies had set up a microphone and speakers in Times Square, and spied the obvious Galwaymen and Galwaywoman ready to watch the Tribes fifteen do battle. The two Galwaymen were bedecked in Caherlistrance shirts and were joined by one Johnny as they sang The Fields of Athenry to the crowded streets. And the song moved the other Johnny to dance into frame and join them, bringing a Galwaywoman in to dance along. The amazing moment had passersby double take and gawk at the joyous scenes of Galway's support a quarter way around the world for the first step on the road to Sam in the summer. Caherlistrane GAA and Ladies Football club shared the amazing clip of their colours Galway are overwhelming favourites to advance, but they should be wary of a New York side that has taken some scalps in recent years, and run heavyweights closer than comfortable on several occasions. Galway will be stinging after they let slip a commanding place atop the NFL 2025 Division 1 table - defeats to Dublin and Kerry saw them fall out of the top two having led much of the campaign without defeat in their first five games. New York will have some hope against 2024 finalists Galway - they took down Leitrim in 2023, and their 15-point defeat to Mayo flattered the Green and Red. Their 2024 Tailteann Cup campaign ended with narrow defeat to Laois. Two of New York's stars are US-born, with Shane and Mikey Brosnan featuring in the side's famous win over Leitrim in the 2023 Championship. The duo, of Kerry parents, have played down their chances, hoping for a good showing against the Tribesmen but eyeing up long-term gains for NY football with such a glamorous side in the Bronx.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.0955

Generated New Text:

Liverpool FC supporters have arrived in full force in Barcelona for the Champions League quarter-final tie this weekend. Liverpool faces Barcelona at the iconic Camp Nou Stadium on Sunday, April 6th, with a start time of 9pm local (8pm UK time). However, Liverpool's fervent fan base began descending on the city a tad early to cheer on their boys. This away leg of the Champions League requires a more substantial trek than usual, but it is a crucial step on their journey towards the final. Thousands of the Red-adoring fans have made the cross-continent trek to Barcelona, spotted sightseeing throughout the city in anticipation for the upcoming clash. A trio of Liverpool enthusiasts participated in an impromptu Beatles sing-along in the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Galway GAA fans are in New York en masse for the Connacht Senior Football Championship quarter-final in the Bronx this weekend. Galway face New York in the Gaelic Grounds in New York City on Sunday 6 April, with a throw-in time of 3pm local (8pm Irish time), but the Tribes' support arrived a little early to make their presence known. Galway's Connacht Senior Football Championship away journey is a little further than usual, but it's the first hurdle on the way to Croke Park and a professional job is needed. And so, thousands of the maroon faithful made their pilgrimage to New York, and were spotted at landmarks and iconic New York spots in the build-up to the notable tie. Three Galway fans were roped into a very Irish sing-song on the streets of New York. The 2 Johnnies had set up a microphone and speakers in Times Square, and spied the obvious Galwaymen and Galwaywoman ready to watch the Tribes fifteen do battle. The two Galwaymen were bedecked in Caherlistrance shirts and were joined by one Johnny as they sang The Fields of Athenry to the crowded streets. And the song moved the other Johnny to dance into frame and join them, bringing a Galwaywoman in to dance along. The amazing moment had passersby double take and gawk at the joyous scenes of Galway's support a quarter way around the world for the first step on the road to Sam in the summer. Caherlistrane GAA and Ladies Football club shared the amazing clip of their colours Galway are overwhelming favourites to advance, but they should be wary of a New York side that has taken some scalps in recent years, and run heavyweights closer than comfortable on several occasions. Galway will be stinging after they let slip a commanding place atop the NFL 2025 Division 1 table - defeats to Dublin and Kerry saw them fall out of the top two having led much of the campaign without defeat in their first five games. New York will have some hope against 2024 finalists Galway - they took down Leitrim in 2023, and their 15-point defeat to Mayo flattered the Green and Red. Their 2024 Tailteann Cup campaign ended with narrow defeat to Laois. Two of New York's stars are US-born, with Shane and Mikey Brosnan featuring in the side's famous win over Leitrim in the 2023 Championship. The duo, of Kerry parents, have played down their chances, hoping for a good showing against the Tribesmen but eyeing up long-term gains for NY football with such a glamorous side in the Bronx.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.90, Tokens: 106, METEOR: 0.0504

Temp: 0.79, Tokens: 130, METEOR: 0.1043

Temp: 0.78, Tokens: 124, METEOR: 0.0852

Temp: 0.92, Tokens: 116, METEOR: 0.0822

Temp: 0.90, Tokens: 137, METEOR: 0.0801

Temp: 0.89, Tokens: 100, METEOR: 0.0654

Temp: 0.91, Tokens: 128, METEOR: 0.0726

Temp: 0.93, Tokens: 100, METEOR: 0.0647

Temp: 0.92, Tokens: 107, METEOR: 0.0639

Temp: 1.00, Tokens: 131, METEOR: 0.0788

Temp: 0.89, Tokens: 100, METEOR: 0.0580

Temp: 0.96, Tokens: 123, METEOR: 0.0615

Temp: 0.99, Tokens: 100, METEOR: 0.0800

Temp: 0.91, Tokens: 102, METEOR: 0.0579

Temp: 1.00, Tokens: 117, METEOR: 0.0640

Temp: 0.89, Tokens: 100, METEOR: 0.0490

Temp: 0.95, Tokens: 113, METEOR: 0.0777

Temp: 1.00, Tokens: 100, METEOR: 0.0616

Temp: 0.91, Tokens: 100, METEOR: 0.0616

Temp: 1.00, Tokens: 103, METEOR: 0.0614

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8900

Max Tokens: 100

METEOR Score: 0.0555

Generated Text:

Cricket lovers are flocking to Sydney for the Ashes Test match this weekend as Australia takes on England in the legendary Sydney Cricket Ground. The match starts on Friday, 17th April, kicking-off at 10am local time (1pm BST), with Aussies supporters showing up early to assert their dominance. The journey to the Sydney Cricket Ground for the Ashes is lengthy, but it's the initial step towards the much-coveted trophy. Thus, droves of the green and

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Galway GAA fans are in New York en masse for the Connacht Senior Football Championship quarter-final in the Bronx this weekend. Galway face New York in the Gaelic Grounds in New York City on Sunday 6 April, with a throw-in time of 3pm local (8pm Irish time), but the Tribes' support arrived a little early to make their presence known. Galway's Connacht Senior Football Championship away journey is a little further than usual, but it's the first hurdle on the way to Croke Park and a professional job is needed. And so, thousands of the maroon faithful made their pilgrimage to New York, and were spotted at landmarks and iconic New York spots in the build-up to the notable tie. Three Galway fans were roped into a very Irish sing-song on the streets of New York. The 2 Johnnies had set up a microphone and speakers in Times Square, and spied the obvious Galwaymen and Galwaywoman ready to watch the Tribes fifteen do battle. The two Galwaymen were bedecked in Caherlistrance shirts and were joined by one Johnny as they sang The Fields of Athenry to the crowded streets. And the song moved the other Johnny to dance into frame and join them, bringing a Galwaywoman in to dance along. The amazing moment had passersby double take and gawk at the joyous scenes of Galway's support a quarter way around the world for the first step on the road to Sam in the summer. Caherlistrane GAA and Ladies Football club shared the amazing clip of their colours Galway are overwhelming favourites to advance, but they should be wary of a New York side that has taken some scalps in recent years, and run heavyweights closer than comfortable on several occasions. Galway will be stinging after they let slip a commanding place atop the NFL 2025 Division 1 table - defeats to Dublin and Kerry saw them fall out of the top two having led much of the campaign without defeat in their first five games. New York will have some hope against 2024 finalists Galway - they took down Leitrim in 2023, and their 15-point defeat to Mayo flattered the Green and Red. Their 2024 Tailteann Cup campaign ended with narrow defeat to Laois. Two of New York's stars are US-born, with Shane and Mikey Brosnan featuring in the side's famous win over Leitrim in the 2023 Championship. The duo, of Kerry parents, have played down their chances, hoping for a good showing against the Tribesmen but eyeing up long-term gains for NY football with such a glamorous side in the Bronx.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-third test with the Galway GAA fans in New York story, both approaches successfully transformed the fan-focused sports report while maintaining the enthusiastic tone and storytelling elements about traveling supporters. The manual approach (METEOR: 0.0955) reimagined the scenario as Liverpool FC fans traveling to Barcelona for a Champions League quarter-final, preserving key elements like the early arrival of passionate supporters, specific match details, and fans engaging in cultural expressions (Beatles sing-along instead of Irish songs). The PSO-optimized version (Temperature: 0.8900, Max Tokens: 100, METEOR: 0.0555) achieved significantly better originality by transposing the scenario to cricket with Australian fans in Sydney for an Ashes Test match against England, though it was cut off much earlier due to token limitations. Both versions effectively captured the essence of dedicated sports fans traveling internationally while creating distinctly different scenarios and achieving impressively low METEOR scores, indicating high originality.

34)

SAMPLE:

One of Galway's most distinguished hurling clubs has unveiled their route back to the top table with an ambitious youth programme. However, despite their ambitions, the All-Ireland Senior Club Championship winners, Castlegar GAA, are putting fun at the centre of their new endeaveour The club has undergone quite the transformation with some vital upgrades, including a state-of-the-art indoor arena and a revamped nursery programme for budding hurlers and camogie player as young as three years old. Castlegar are Galway hurling royalty, but their last County Championship at senior level is now 41 years ago. Similarly, they blazed a trail in the All-Ireland series, winning the first by a Galway team back in 1980. And now, the club is planning to sit at the top table once again, and take their place amongst the county and national elite. It's all hands on deck at Castlegar as volunteers have been flat-out since training kicked off, pulling in a hefty crowd of more than 100 budding hurlers and camogie players weekly, ranging from ages three to four. Championing inclusion and diversity, the club is on a mission to make sure each kid can revel in the joys of the sports within a top-notch, welcoming, and secure setting. Whilst Roscam is now part urban, Castlegar's roots are deeply rural.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1624

Generated New Text:

In an audacious bid to reclaim past glory, the famed football club of Lancashire, Bolton Wanderers, has declared a bold advancement in their youth football strategies. Yet, the mantra of fun forms the nucleus of their rejuvenatee vision. The renovation of the club involves key improvements such as a technologically advanced training facility and a revived academy program for prospectual football players as young as three. Though their last Championship title dates back four decades, they have had historical victories like the FA Cup in 1979. Aiming to reclaim their past reputation and reestablish their standing among the county's elite, the club is rallying its forces. The initiative is attracting over a hundred potential football and soccer players every week, with age groups starting from three and

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

One of Galway's most distinguished hurling clubs has unveiled their route back to the top table with an ambitious youth programme. However, despite their ambitions, the All-Ireland Senior Club Championship winners, Castlegar GAA, are putting fun at the centre of their new endeaveour The club has undergone quite the transformation with some vital upgrades, including a state-of-the-art indoor arena and a revamped nursery programme for budding hurlers and camogie player as young as three years old. Castlegar are Galway hurling royalty, but their last County Championship at senior level is now 41 years ago. Similarly, they blazed a trail in the All-Ireland series, winning the first by a Galway team back in 1980. And now, the club is planning to sit at the top table once again, and take their place amongst the county and national elite. It's all hands on deck at Castlegar as volunteers have been flat-out since training kicked off, pulling in a hefty crowd of more than 100 budding hurlers and camogie players weekly, ranging from ages three to four. Championing inclusion and diversity, the club is on a mission to make sure each kid can revel in the joys of the sports within a top-notch, welcoming, and secure setting. Whilst Roscam is now part urban, Castlegar's roots are deeply rural.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 100, METEOR: 0.1207

Temp: 0.93, Tokens: 128, METEOR: 0.1363

Temp: 0.73, Tokens: 146, METEOR: 0.2280

Temp: 0.87, Tokens: 149, METEOR: 0.1747

Temp: 0.87, Tokens: 128, METEOR: 0.1796

Temp: 0.77, Tokens: 114, METEOR: 0.1615

Temp: 0.89, Tokens: 135, METEOR: 0.1553

Temp: 0.89, Tokens: 136, METEOR: 0.1452

Temp: 0.91, Tokens: 132, METEOR: 0.1663

Temp: 0.76, Tokens: 127, METEOR: 0.1780

Temp: 0.76, Tokens: 113, METEOR: 0.1464

Temp: 0.86, Tokens: 126, METEOR: 0.1398

Temp: 0.97, Tokens: 124, METEOR: 0.1720

Temp: 0.89, Tokens: 119, METEOR: 0.1390

Temp: 0.73, Tokens: 121, METEOR: 0.1774

Temp: 0.78, Tokens: 111, METEOR: 0.1417

Temp: 0.86, Tokens: 120, METEOR: 0.1413

Temp: 0.92, Tokens: 116, METEOR: 0.1329

Temp: 0.86, Tokens: 113, METEOR: 0.1107

Temp: 0.78, Tokens: 117, METEOR: 0.1702

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8560

Max Tokens: 113

METEOR Score: 0.1538

Generated Text:

In a landmark move, one of Nottingham's most esteemed football squads has outlined their return to prominence with a pioneering youth initiative. Granting prime importance to enjoyment, the Football Association cup winners, Nottingham Forest F.C., are reshaping their operations with new youthful focus. The club has seen significant enhancements including a modern gym and an upgraded training facility for aspiring footballers as young as four. Forest, once the kings of Nottingham football, have not won the County Championship at the senior level in over three decades. They made history in the Football Association series, being the first

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

One of Galway's most distinguished hurling clubs has unveiled their route back to the top table with an ambitious youth programme. However, despite their ambitions, the All-Ireland Senior Club Championship winners, Castlegar GAA, are putting fun at the centre of their new endeaveour The club has undergone quite the transformation with some vital upgrades, including a state-of-the-art indoor arena and a revamped nursery programme for budding hurlers and camogie player as young as three years old. Castlegar are Galway hurling royalty, but their last County Championship at senior level is now 41 years ago. Similarly, they blazed a trail in the All-Ireland series, winning the first by a Galway team back in 1980. And now, the club is planning to sit at the top table once again, and take their place amongst the county and national elite. It's all hands on deck at Castlegar as volunteers have been flat-out since training kicked off, pulling in a hefty crowd of more than 100 budding hurlers and camogie players weekly, ranging from ages three to four. Championing inclusion and diversity, the club is on a mission to make sure each kid can revel in the joys of the sports within a top-notch, welcoming, and secure setting. Whilst Roscam is now part urban, Castlegar's roots are deeply rural.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-fourth test, both approaches effectively transformed the sports club story. The manual version (METEOR: 0.1624) reimagined Castlegar GAA as Bolton Wanderers FC with similar youth development focus and facility upgrades. The PSO-optimized version (Temperature: 0.8560, Max Tokens: 113, METEOR: 0.1538) created a comparable narrative about Nottingham Forest F.C., achieving slightly better originality despite using a lower temperature setting.

35)

SAMPLE:

Kilkenny GAA have issued an update over the Leinster Senior Hurling Championship 2025 group stage opener against Galway slated for throw-in 3:45pm on Saturday 19 April. Met Eireann warned of heavy downpours across the south and southeast on Friday 18 April and into Saturday 19 April. And their forecast was spot on, with torrents of rain seen in Wicklow and neighbouring counties. The heavy downpours left widespread patches of local flooding, with some wondering if Nowlan Park would be able to host the Kilkenny v Galway hurling tie after the rain that fell within the last 24 hours. However, Kilkenny GAA were glad to report that the pitch at their iconic home ground is in shape for the tie. On Saturday, they updated those hoping to head to Nowlan Park: "Following a number of queries this morning, we confirm that this afternoon’s Kilkenny v. Galway Leinster SHC match in UPMC Nowlan Park IS going ahead as scheduled at 3:45pm." RTÉ camera crews have been making their way to Nowlan Park, and were surely amongst those wondering if, indeed, the game could go ahead. Despite the lack of knockout hurling in the Championship, there isn't much room for failure in the group staged.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1666

Generated New Text:

Glasgow Warriors Rugby Football Club issued an update regarding the first match of the Six Nations 2025 Championship group stage against Wales set to commence at 1:30pm on Sunday, March 2nd. The Met Office issued a weather warning indicating heavy snowfall in Scotland's central and southern regions on Saturday, March 1st, carrying over into game day, Sunday. The prediction proved accurate, with heavy snowfall affecting Glasgow and surrounding areas. The inclement weather caused local transport disruptions, leaving many fans wondering if Scotstoun Stadium would be able to accommodate the scheduled match. However, Glasgow Warriors RFC has assured supporters that the pitch is ready for action. They issued the following update on Sunday for those planning to attend: "We

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Kilkenny GAA have issued an update over the Leinster Senior Hurling Championship 2025 group stage opener against Galway slated for throw-in 3:45pm on Saturday 19 April. Met Eireann warned of heavy downpours across the south and southeast on Friday 18 April and into Saturday 19 April. And their forecast was spot on, with torrents of rain seen in Wicklow and neighbouring counties. The heavy downpours left widespread patches of local flooding, with some wondering if Nowlan Park would be able to host the Kilkenny v Galway hurling tie after the rain that fell within the last 24 hours. However, Kilkenny GAA were glad to report that the pitch at their iconic home ground is in shape for the tie. On Saturday, they updated those hoping to head to Nowlan Park: "Following a number of queries this morning, we confirm that this afternoon's Kilkenny v. Galway Leinster SHC match in UPMC Nowlan Park IS going ahead as scheduled at 3:45pm." RTÉ camera crews have been making their way to Nowlan Park, and were surely amongst those wondering if, indeed, the game could go ahead. Despite the lack of knockout hurling in the Championship, there isn't much room for failure in the group staged.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.86, Tokens: 148, METEOR: 0.1639

Temp: 0.95, Tokens: 114, METEOR: 0.1291

Temp: 0.94, Tokens: 104, METEOR: 0.1175

Temp: 0.70, Tokens: 108, METEOR: 0.1506

Temp: 1.00, Tokens: 134, METEOR: 0.1345

Temp: 1.00, Tokens: 150, METEOR: 0.1596

Temp: 0.92, Tokens: 100, METEOR: 0.0872

Temp: 0.83, Tokens: 100, METEOR: 0.0975

Temp: 0.73, Tokens: 100, METEOR: 0.1027

Temp: 1.00, Tokens: 130, METEOR: 0.1613

Temp: 1.00, Tokens: 150, METEOR: 0.1215

Temp: 0.91, Tokens: 100, METEOR: 0.1007

Temp: 0.80, Tokens: 100, METEOR: 0.1487

Temp: 0.75, Tokens: 100, METEOR: 0.1545

Temp: 1.00, Tokens: 117, METEOR: 0.1474

Temp: 1.00, Tokens: 139, METEOR: 0.1693

Temp: 0.91, Tokens: 100, METEOR: 0.1103

Temp: 0.85, Tokens: 100, METEOR: 0.1158

Temp: 0.81, Tokens: 100, METEOR: 0.1336

Temp: 0.98, Tokens: 115, METEOR: 0.1696

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9222

Max Tokens: 100

METEOR Score: 0.1054

Generated Text:

The Waterford Football Association has released a statement on the Munster Senior Football Championship 2026 preliminary round fixture against Tipperary set for kick-off 4:30pm on Sunday, 15 May. Weather forecasts warned of severe snowstorms in the midlands and southwest on Saturday 14 May and the following Sunday. Their prediction was accurate, with heavy snowfall witnessed in Clare and neighbouring regions. The snowstorm caused widespread disruptions, leading some to question if Fraher Field would be fit for

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Kilkenny GAA have issued an update over the Leinster Senior Hurling Championship 2025 group stage opener against Galway slated for throw-in 3:45pm on Saturday 19 April. Met Eireann warned of heavy downpours across the south and southeast on Friday 18 April and into Saturday 19 April. And their forecast was spot on, with torrents of rain seen in Wicklow and neighbouring counties. The heavy downpours left widespread patches of local flooding, with some wondering if Nowlan Park would be able to host the Kilkenny v Galway hurling tie after the rain that fell within the last 24 hours. However, Kilkenny GAA were glad to report that the pitch at their iconic home ground is in shape for the tie. On Saturday, they updated those hoping to head to Nowlan Park: "Following a number of queries this morning, we confirm that this afternoon's Kilkenny v. Galway Leinster SHC match in UPMC Nowlan Park IS going ahead as scheduled at 3:45pm." RTÉ camera crews have been making their way to Nowlan Park, and were surely amongst those wondering if, indeed, the game could go ahead. Despite the lack of knockout hurling in the Championship, there isn't much room for failure in the group staged.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-fifth test with the Kilkenny GAA match update, both approaches successfully transformed the sports event weather advisory while maintaining the news update format. The manual approach (METEOR: 0.1666) reimagined the scenario as Glasgow Warriors Rugby updating fans about a Six Nations match against Wales proceeding despite snowfall, effectively shifting from Irish hurling to Scottish rugby while preserving the weather challenge narrative. The PSO-optimized version (Temperature: 0.9222, Max Tokens: 100, METEOR: 0.1054) achieved significantly better originality by creating a Waterford Football Association update about a Munster Championship fixture affected by snowstorms instead of rain, though it was cut off mid-sentence due to token limitations.

36)

SAMPLE:

One of the biggest figures in Connacht rugby could be making a move to France, potentially breaking fans' hearts. Toulon have reportedly lined up Ireland centre Bundee Aki as one of their main transfer targets next summer, according to French media. It's understood that Aki may have already held initial talks with Toulon, however his contract with the IRFU doesn't expire until 2026. The Ireland rugby star and Galway resident has quickly become a household name since moving to the country ten years ago. Any potential teams seeking to sign Aki before the 2026 season would be required to pay a fee to release him from his current deal. The 35-year-old is originally from New Zealand, but he has also played for Malaysia. While he carries a heavy load in the Rugby Union team, he is also a dedicated father and husband after tying the knot to his wif in 2023. He currently lives in Galway with his wife and their children. Aki is expected to be part of next summer’s Lions tour, which Andy Farrell will oversee as head coach. Bundee was born on 7 April 1990 and is originally from the Auckland suburb of Ōtāhuhu. His birth name is Fua Leiofi Bundellu Aki and his parents named him Fua Leiofi and chose Bundellu after the doctor who delivered him. His now notorious nickname ‘Bundee’ was given to him by a rugby coach at under-age level.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1349

Generated New Text:

In a shocking twist for England's cricket world, Somerset-based batsman Tom Banton could be heading to Australia. The Sydney Sixers have allegedly marked England's promising young talent as their prime recruitment goal for the upcoming season, as reported by Australian media. It's been suggested that conversations between Banton and the Sixers may already be underway, despite his contract with the ECB extending into 2027. Quickly becoming a popular figure in British cricket since his professional debut five years ago, luring Banton away from England before his contract ends would require a substantial payoff. Born and raised in Chiltern, the 25-year old had also played in prior years for the Pakistani cricket team. Besides his cricket commitments, Banton devotes himself to

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

One of the biggest figures in Connacht rugby could be making a move to France, potentially breaking fans' hearts. Toulon have reportedly lined up Ireland centre Bundee Aki as one of their main transfer targets next summer, according to French media. It's understood that Aki may have already held initial talks with Toulon, however his contract with the IRFU doesn't expire until 2026. The Ireland rugby star and Galway resident has quickly become a household name since moving to the country ten years ago. Any potential teams seeking to sign Aki before the 2026 season would be required to pay a fee to release him from his current deal. The 35-year-old is originally from New Zealand, but he has also played for Malaysia. While he carries a heavy load in the Rugby Union team, he is also a dedicated father and husband after tying the knot to his wif in 2023. He currently lives in Galway with his wife and their children. Aki is expected to be part of next summer's Lions tour, which Andy Farrell will oversee as head coach. Bundee was born on 7 April 1990 and is originally from the Auckland suburb of Ōtāhuhu. His birth name is Fua Leiofi Bundellu Aki and his parents named him Fua Leiofi and chose Bundellu after the doctor who delivered him. His now notorious nickname 'Bundee' was given to him by a rugby coach at under-age level.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.89, Tokens: 132, METEOR: 0.1466

Temp: 0.79, Tokens: 119, METEOR: 0.1253

Temp: 0.97, Tokens: 101, METEOR: 0.1239

Temp: 0.77, Tokens: 125, METEOR: 0.1380

Temp: 0.99, Tokens: 142, METEOR: 0.1051

Temp: 0.88, Tokens: 150, METEOR: 0.1287

Temp: 0.78, Tokens: 144, METEOR: 0.1372

Temp: 0.87, Tokens: 136, METEOR: 0.1438

Temp: 0.84, Tokens: 142, METEOR: 0.1607

Temp: 1.00, Tokens: 122, METEOR: 0.1567

Temp: 0.91, Tokens: 150, METEOR: 0.1196

Temp: 0.87, Tokens: 149, METEOR: 0.1628

Temp: 0.91, Tokens: 140, METEOR: 0.1495

Temp: 0.93, Tokens: 143, METEOR: 0.1460

Temp: 1.00, Tokens: 121, METEOR: 0.1140

Temp: 0.94, Tokens: 150, METEOR: 0.1452

Temp: 0.89, Tokens: 142, METEOR: 0.1593

Temp: 0.98, Tokens: 130, METEOR: 0.0984

Temp: 0.94, Tokens: 134, METEOR: 0.1114

Temp: 1.00, Tokens: 130, METEOR: 0.0983

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 130

METEOR Score: 0.1094

Generated Text:

A leading light in the world of American football, the Seattle Seahawks' quarterback, Jacob Flynn, might be saying goodbye to his home turf and hello to Texas. Word on the street, according to the US media, is that the Houston Texans have Fordham University's prime athlete Flynn on their radar for a potential offseason trade. Despite Flynn's contract not being up until 2030, preliminary discussions between the NFL star and Texans seem to have occurred. If the Texans are eager to secure Flynn before then, they would need to fork out a fee. Prior to his football stardom in the US, the 29-year-old New Jersey-born sports

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

One of the biggest figures in Connacht rugby could be making a move to France, potentially breaking fans' hearts. Toulon have reportedly lined up Ireland centre Bundee Aki as one of their main transfer targets next summer, according to French media. It's understood that Aki may have already held initial talks with Toulon, however his contract with the IRFU doesn't expire until 2026. The Ireland rugby star and Galway resident has quickly become a household name since moving to the country ten years ago. Any potential teams seeking to sign Aki before the 2026 season would be required to pay a fee to release him from his current deal. The 35-year-old is originally from New Zealand, but he has also played for Malaysia. While he carries a heavy load in the Rugby Union team, he is also a dedicated father and husband after tying the knot to his wif in 2023. He currently lives in Galway with his wife and their children. Aki is expected to be part of next summer's Lions tour, which Andy Farrell will oversee as head coach. Bundee was born on 7 April 1990 and is originally from the Auckland suburb of Ōtāhuhu. His birth name is Fua Leiofi Bundellu Aki and his parents named him Fua Leiofi and chose Bundellu after the doctor who delivered him. His now notorious nickname 'Bundee' was given to him by a rugby coach at under-age level.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-sixth test with the Bundee Aki rugby transfer rumor, both approaches successfully transformed the sports transfer story while maintaining journalistic style and biographical elements. The manual approach (METEOR: 0.1349) reimagined the scenario as cricket player Tom Banton potentially moving from Somerset to the Sydney Sixers, effectively shifting from rugby to cricket while preserving key elements like contract details and personal background. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 130, METEOR: 0.1094) achieved better originality by creating a completely different scenario about American football quarterback Jacob Flynn potentially moving from the Seattle Seahawks to the Houston Texans, though both versions were cut off mid-sentence due to token limitations.

37)

SAMPLE:

Tipperary player Darragh McCarthy was sent off the pitch after an 'incident' with Cork player Sean O'Donoghue before today's hurling action even began. There was drama on the pitch before the ball was even thrown in for Cork v Tipp in the Munster Hurling Championship as McCarthy struck Inniscarra man O'Donoghue. The 29-year-old Cork defender ended up on the ground before the referee even threw in the ball after being struck by the young Tipp hurling star. The game was halted just after the 1-minute mark as 19-year-old McCarthy was red-carded for the off the ball incident, which occurred during an altercation at the Cork end, and the Tipp player was visibly upset as he was sent off the pitch. Discussing the incident on the RTÉ Sunday Game panel, McCarthy, who is Tipperary's free-taker, was described by pundits as having had a "wonderful year" in hurling, but that "there is striking action here" when rewatching the incident. "I think Darragh was so hyped up, he was the one who kind of instigated it," said Kilkenny legend Henry Shefflin, "A lot of time we see defenders come out and hit the forward, but Darragh actually went for him, he was so hyped up." Having a starting player out so early brought major drama to the game, with a home crowd going wild down the Páirc. The incident will have been a major blow for the Premier County, who are looking for revenge over the Rebels after losing to Cork in the league final earlier this month.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1223

Generated New Text:

In a surprising turn of events, Dalhousie striker Eli Sullivan was ordered off the field even before the first whistle of the Nova Scotia Soccer Championship match between Halifax and Dalhousie. It seems that Sullivan had clashed with Halifax defender Josh MacNeil before the action got underway. The 32-year-old Halifax defender was knocked down even before the referee had the chance to start proceedings, having been hit hard by the youthful Dalhousie soccer starlet. Play was abruptly suspended shortly after the first 2-minute mark with 21-year-old Sullivan receiving a direct red for his off-ball antics, a hilarious mishap at the Halifax side. It was a scene that left Sullivan, who was renowned in Dalhousie for his spot-k

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Tipperary player Darragh McCarthy was sent off the pitch after an 'incident' with Cork player Sean O'Donoghue before today's hurling action even began. There was drama on the pitch before the ball was even thrown in for Cork v Tipp in the Munster Hurling Championship as McCarthy struck Inniscarra man O'Donoghue. The 29-year-old Cork defender ended up on the ground before the referee even threw in the ball after being struck by the young Tipp hurling star. The game was halted just after the 1-minute mark as 19-year-old McCarthy was red-carded for the off the ball incident, which occurred during an altercation at the Cork end, and the Tipp player was visibly upset as he was sent off the pitch. Discussing the incident on the RTÉ Sunday Game panel, McCarthy, who is Tipperary's free-taker, was described by pundits as having had a "wonderful year" in hurling, but that "there is striking action here" when rewatching the incident. "I think Darragh was so hyped up, he was the one who kind of instigated it," said Kilkenny legend Henry Shefflin, "A lot of time we see defenders come out and hit the forward, but Darragh actually went for him, he was so hyped up." Having a starting player out so early brought major drama to the game, with a home crowd going wild down the Páirc. The incident will have been a major blow for the Premier County, who are looking for revenge over the Rebels after losing to Cork in the league final earlier this month.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.96, Tokens: 108, METEOR: 0.0862

Temp: 0.89, Tokens: 122, METEOR: 0.1040

Temp: 0.83, Tokens: 107, METEOR: 0.1027

Temp: 0.80, Tokens: 120, METEOR: 0.1188

Temp: 0.77, Tokens: 131, METEOR: 0.1351

Temp: 1.00, Tokens: 100, METEOR: 0.0967

Temp: 1.00, Tokens: 130, METEOR: 0.0940

Temp: 1.00, Tokens: 110, METEOR: 0.0880

Temp: 0.74, Tokens: 100, METEOR: 0.0904

Temp: 0.88, Tokens: 137, METEOR: 0.1451

Temp: 1.00, Tokens: 100, METEOR: 0.0777

Temp: 1.00, Tokens: 119, METEOR: 0.1136

Temp: 1.00, Tokens: 108, METEOR: 0.0882

Temp: 0.72, Tokens: 100, METEOR: 0.1031

Temp: 0.92, Tokens: 130, METEOR: 0.0981

Temp: 1.00, Tokens: 100, METEOR: 0.0780

Temp: 1.00, Tokens: 114, METEOR: 0.0861

Temp: 1.00, Tokens: 104, METEOR: 0.0884

Temp: 0.73, Tokens: 100, METEOR: 0.0800

Temp: 0.95, Tokens: 112, METEOR: 0.0800

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 100

METEOR Score: 0.0779

Generated Text:

In an unexpected turn of events, Galway's rising star Gavin Costello was expelled from the football field following a confrontation with Kerry player, Eoin Walsh prior to the main action of today's match. The tension escalated even before the throw-in for Kerry v Galway in the All-Ireland Senior Football Championship where Costello, the Galway powerhouse, targeted Walsh from Dr Crokes. The seasoned Kerry defender was floored before the referee managed to proceed with the game, owing to the aggressive approach

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Tipperary player Darragh McCarthy was sent off the pitch after an 'incident' with Cork player Sean O'Donoghue before today's hurling action even began. There was drama on the pitch before the ball was even thrown in for Cork v Tipp in the Munster Hurling Championship as McCarthy struck Inniscarra man O'Donoghue. The 29-year-old Cork defender ended up on the ground before the referee even threw in the ball after being struck by the young Tipp hurling star. The game was halted just after the 1-minute mark as 19-year-old McCarthy was red-carded for the off the ball incident, which occurred during an altercation at the Cork end, and the Tipp player was visibly upset as he was sent off the pitch. Discussing the incident on the RTÉ Sunday Game panel, McCarthy, who is Tipperary's free-taker, was described by pundits as having had a "wonderful year" in hurling, but that "there is striking action here" when rewatching the incident. "I think Darragh was so hyped up, he was the one who kind of instigated it," said Kilkenny legend Henry Shefflin, "A lot of time we see defenders come out and hit the forward, but Darragh actually went for him, he was so hyped up." Having a starting player out so early brought major drama to the game, with a home crowd going wild down the Páirc. The incident will have been a major blow for the Premier County, who are looking for revenge over the Rebels after losing to Cork in the league final earlier this month.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-seventh test with the hurling match incident, both approaches successfully transformed the sports altercation story while maintaining the journalistic tone and incident reporting structure. The manual approach (METEOR: 0.1223) reimagined the scenario as soccer players Eli Sullivan and Josh MacNeil in a Nova Scotia Soccer Championship match, effectively shifting from Irish hurling to Canadian soccer while preserving key elements like the pre-game confrontation and sending off. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 100, METEOR: 0.0779) achieved significantly better originality by keeping the scenario in Irish sports but changing to Galway's Gavin Costello confronting Kerry's Eoin Walsh in football rather than hurling, though it was cut off earlier due to token limitations.

38)

SAMPLE:

Tommy Tiernan Show fans have heaped praise on former Irish manager Martin O'Neill as a "class act" as he slammed any suggestion he treated the job as a "well-paid jolly-up." O'Neill, who spent five years in charge of the national team, was a guest on the show yesterday evening where he talked about his early life in Derry, his big break at Nottingham Forest, winning a double European Cup win and his biggest regrets. When Tommy asked if his role as football manager was "just another job" for the former Celtic boss, he said: "No, absolutely not. It never was." He said there had been some commentary suggesting that some former Ireland managers like him had treated the role as "a little jolly-up, a well-paid jolly-up" but he insisted "it was never like that to me." "To manage the Republic of Ireland was an absolute privilege. A genuine privilege," he said, "In 2016, when we played our opening game of the tournament against Sweden in Paris, when we had 25,000 people there and Sweden had the other 25,000, it was the most colourful sight you could imagine. "And within 12 minutes, our fans were singing The Fields of Athenry. It was something to behold. It was tingling." O'Neill said it was incredible to do well in that tournament and it had been "devastating" to fail against Denmark in the playoff match to qualify for the 2018 World Cup in Russia. "So, I never – not for one minute – treated that job as a jolly-up. It was important to me," he added. Fans of the show were quick to praise the former Northern Ireland midfielder on social media. "I don't care what anyone says, Martin O'Neill is a class act. Unreal manager," one person wrote on X. "Very wholesome this, lovely to hear Martin's words about GAA and recalling his school days... a wonderful character," another added, "I love Martin O'Neill. Says it like it is – no waffle. A great player and a great manager," said another fan. O'Neill finished the interview with Tommy Tiernan by praising the comedian's performance in the hit comedy, Derry Girls, but admitted that he had never seen his stand-up comedy.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.0892

Generated New Text:

The guests and viewers of The Graham Norton Show were enchanted by the compelling stories and lively spirit of former England cricketer, Ian Botham. Botham held the position of England's captain for a few years and dismissed any notion that he ever considered his duties as a "well-earned break." On the show last night, he discussed his upbringing in Somerset, his life-changing encounter with county cricket, his legendary Ashes series, and some of his significant disappointments.

When Graham queried whether cricket was "just another game" for the decorated player, Botham promptly responded, "No, not at all. It never was." He further elaborated on some criticisms suggesting past England cricket captains, like himself, viewed their roles as a "

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Tommy Tiernan Show fans have heaped praise on former Irish manager Martin O'Neill as a "class act" as he slammed any suggestion he treated the job as a "well-paid jolly-up." O'Neill, who spent five years in charge of the national team, was a guest on the show yesterday evening where he talked about his early life in Derry, his big break at Nottingham Forest, winning a double European Cup win and his biggest regrets. When Tommy asked if his role as football manager was "just another job" for the former Celtic boss, he said: "No, absolutely not. It never was." He said there had been some commentary suggesting that some former Ireland managers like him had treated the role as "a little jolly-up, a well-paid jolly-up" but he insisted "it was never like that to me." "To manage the Republic of Ireland was an absolute privilege. A genuine privilege," he said, "In 2016, when we played our opening game of the tournament against Sweden in Paris, when we had 25,000 people there and Sweden had the other 25,000, it was the most colourful sight you could imagine. "And within 12 minutes, our fans were singing The Fields of Athenry. It was something to behold. It was tingling." O'Neill said it was incredible to do well in that tournament and it had been "devastating" to fail against Denmark in the playoff match to qualify for the 2018 World Cup in Russia. "So, I never – not for one minute – treated that job as a jolly-up. It was important to me," he added. Fans of the show were quick to praise the former Northern Ireland midfielder on social media. "I don't care what anyone says, Martin O'Neill is a class act. Unreal manager," one person wrote on X. "Very wholesome this, lovely to hear Martin's words about GAA and recalling his school days... a wonderful character," another added, "I love Martin O'Neill. Says it like it is – no waffle. A great player and a great manager," said another fan. O'Neill finished the interview with Tommy Tiernan by praising the comedian's performance in the hit comedy, Derry Girls, but admitted that he had never seen his stand-up comedy.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.93, Tokens: 149, METEOR: 0.1086

Temp: 0.78, Tokens: 130, METEOR: 0.0790

Temp: 0.86, Tokens: 107, METEOR: 0.0619

Temp: 0.78, Tokens: 100, METEOR: 0.0621

Temp: 0.90, Tokens: 125, METEOR: 0.0808

Temp: 0.78, Tokens: 124, METEOR: 0.1051

Temp: 0.70, Tokens: 144, METEOR: 0.1233

Temp: 0.89, Tokens: 126, METEOR: 0.0941

Temp: 0.73, Tokens: 106, METEOR: 0.0781

Temp: 0.91, Tokens: 128, METEOR: 0.0749

Temp: 0.73, Tokens: 111, METEOR: 0.0733

Temp: 0.70, Tokens: 143, METEOR: 0.1091

Temp: 0.89, Tokens: 129, METEOR: 0.1007

Temp: 0.75, Tokens: 107, METEOR: 0.0723

Temp: 0.90, Tokens: 127, METEOR: 0.0691

Temp: 0.73, Tokens: 104, METEOR: 0.0530

Temp: 0.71, Tokens: 122, METEOR: 0.0732

Temp: 0.84, Tokens: 128, METEOR: 0.0907

Temp: 0.77, Tokens: 106, METEOR: 0.0796

Temp: 0.84, Tokens: 122, METEOR: 0.0678

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7285

Max Tokens: 104

METEOR Score: 0.0634

Generated Text:

Viewers of the Graham Norton Show expressed immense admiration for the former England cricket captain, Michael Vaughan, calling him an "absolute professional," as he dismissed any insinuation that he saw his position as a "lavish free ride." Vaughan, who led the English team for five years, made an appearance on the show last night, discussing his early years in Manchester, his defining moment with Yorkshire County Cricket Club, his victorious 2005 Ashes campaign, and his deepest disappointments. When Graham queried whether his role

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Tommy Tiernan Show fans have heaped praise on former Irish manager Martin O'Neill as a "class act" as he slammed any suggestion he treated the job as a "well-paid jolly-up." O'Neill, who spent five years in charge of the national team, was a guest on the show yesterday evening where he talked about his early life in Derry, his big break at Nottingham Forest, winning a double European Cup win and his biggest regrets. When Tommy asked if his role as football manager was "just another job" for the former Celtic boss, he said: "No, absolutely not. It never was." He said there had been some commentary suggesting that some former Ireland managers like him had treated the role as "a little jolly-up, a well-paid jolly-up" but he insisted "it was never like that to me." "To manage the Republic of Ireland was an absolute privilege. A genuine privilege," he said, "In 2016, when we played our opening game of the tournament against Sweden in Paris, when we had 25,000 people there and Sweden had the other 25,000, it was the most colourful sight you could imagine. "And within 12 minutes, our fans were singing The Fields of Athenry. It was something to behold. It was tingling." O'Neill said it was incredible to do well in that tournament and it had been "devastating" to fail against Denmark in the playoff match to qualify for the 2018 World Cup in Russia. "So, I never – not for one minute – treated that job as a jolly-up. It was important to me," he added. Fans of the show were quick to praise the former Northern Ireland midfielder on social media. "I don't care what anyone says, Martin O'Neill is a class act. Unreal manager," one person wrote on X. "Very wholesome this, lovely to hear Martin's words about GAA and recalling his school days... a wonderful character," another added, "I love Martin O'Neill. Says it like it is – no waffle. A great player and a great manager," said another fan. O'Neill finished the interview with Tommy Tiernan by praising the comedian's performance in the hit comedy, Derry Girls, but admitted that he had never seen his stand-up comedy.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the thirty-eighth test with the Tommy Tiernan Show interview, both approaches successfully transformed the TV interview story while maintaining the journalistic reporting style and quote structure. The manual approach (METEOR: 0.0892) reimagined the scenario as cricket legend Ian Botham appearing on The Graham Norton Show, effectively changing from Irish football to English cricket while preserving key elements like defending professional integrity and discussing career highlights. The PSO-optimized version (Temperature: 0.7285, Max Tokens: 104, METEOR: 0.0634) achieved better originality with a similar cricket theme featuring Michael Vaughan on Graham Norton, but using a lower temperature setting that resulted in more specific details like the "2005 Ashes campaign" while still being cut off mid-sentence due to token limitations.

39)

SAMPLE:

Senior Cork Hurler, Shane Kingston, has launched the Poc Tapa Challenge - with the call going out for all Rebel County GAA clubs to get in before the closing date on 25th June. The winners will get a hefty €5,000 for their club and the chance to play in Croke Park, with the runners-up receiving €1,000 and the same chance to tog-out at Headquarters. Now in it's third year, the competition is part of eir’s five-year official sponsorship of the GAA All-Ireland Senior Hurling Championship. Inspired by the traditional "Poc Fada" competition, the challenge has been reimagined to reflect the fast-paced nature of the modern game – rewarding teamwork, precision and speed. How to enter the ‘eir for all’ Poc Tapa Challenge: Rules: The Poc Tapa Challenge is open to all GAA & Camogie clubs nationwide, welcoming participants of all skill levels and ages, whether you’re a seasoned senior team or a rising squad just getting started, the eir for all Poc Tapa Challenge offers an exciting opportunity to showcase your talent, teamwork and community spirit. To enter, teams must film their fastest time completing the challenge on a smartphone, ensuring a stopwatch is visible throughout the footage. Videos must be filmed from the centre of the pitch and submit via X (formerly Twitter) @eir or Instagram @eir.ireland using the hashtags #eirforall and #PocTapa before Wednesday 25th June. Last year's final saw local Wexford rivals go head-to-head, with Craanford GAA Club emerging victor.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1409

Generated New Text:

Celebrated professional golfer, Joel Stone, has initiated the Swing Away Challenge - summoning all US Golf Association clubs to register before the end of submissions on July 30th. The triumphant team will seize a massive $10,000 for their club house and the privilege to play at Augusta National, with the second prize being $2,000 and the same opportunity to tee off on these prestigious greens. Entering its fourth year, the tournament forms part of Nike's seven-year official support of the PGA Championship. Taking cues from the classic "longest drive" competition, the challenge has been revamped to highlight the sharp, rapid play of contemporary golf – valuing coordination, accuracy, and velocity. For the rules to participate in the 'Nike

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Senior Cork Hurler, Shane Kingston, has launched the Poc Tapa Challenge - with the call going out for all Rebel County GAA clubs to get in before the closing date on 25th June. The winners will get a hefty €5,000 for their club and the chance to play in Croke Park, with the runners-up receiving €1,000 and the same chance to tog-out at Headquarters. Now in it's third year, the competition is part of eir's five-year official sponsorship of the GAA All-Ireland Senior Hurling Championship. Inspired by the traditional "Poc Fada" competition, the challenge has been reimagined to reflect the fast-paced nature of the modern game – rewarding teamwork, precision and speed. How to enter the 'eir for all' Poc Tapa Challenge: Rules: The Poc Tapa Challenge is open to all GAA & Camogie clubs nationwide, welcoming participants of all skill levels and ages, whether you're a seasoned senior team or a rising squad just getting started, the eir for all Poc Tapa Challenge offers an exciting opportunity to showcase your talent, teamwork and community spirit. To enter, teams must film their fastest time completing the challenge on a smartphone, ensuring a stopwatch is visible throughout the footage. Videos must be filmed from the centre of the pitch and submit via X (formerly Twitter) @eir or Instagram @eir.ireland using the hashtags #eirforall and #PocTapa before Wednesday 25th June. Last year's final saw local Wexford rivals go head-to-head, with Craanford GAA Club emerging victor.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 118, METEOR: 0.1181

Temp: 0.71, Tokens: 103, METEOR: 0.1291

Temp: 0.85, Tokens: 117, METEOR: 0.0966

Temp: 0.74, Tokens: 140, METEOR: 0.1762

Temp: 0.85, Tokens: 139, METEOR: 0.1279

Temp: 0.76, Tokens: 116, METEOR: 0.1349

Temp: 0.81, Tokens: 100, METEOR: 0.0838

Temp: 0.70, Tokens: 100, METEOR: 0.1033

Temp: 0.70, Tokens: 128, METEOR: 0.1809

Temp: 0.91, Tokens: 135, METEOR: 0.1766

Temp: 0.77, Tokens: 111, METEOR: 0.1450

Temp: 0.86, Tokens: 100, METEOR: 0.0898

Temp: 0.70, Tokens: 100, METEOR: 0.1265

Temp: 0.70, Tokens: 113, METEOR: 0.1350

Temp: 0.90, Tokens: 124, METEOR: 0.1237

Temp: 0.80, Tokens: 105, METEOR: 0.1250

Temp: 0.85, Tokens: 100, METEOR: 0.0927

Temp: 0.80, Tokens: 100, METEOR: 0.1010

Temp: 0.71, Tokens: 104, METEOR: 0.1052

Temp: 0.87, Tokens: 111, METEOR: 0.1198

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.8078

Max Tokens: 100

METEOR Score: 0.1032

Generated Text:

World-famous Tennis star, Roger Federer, has initiated the Tennis Teaser Challenge, inviting all international tennis clubs to participate before the deadline on August 2nd. The triumphant team will receive a grand €7,000 for their club and the opportunity to play at Wimbledon, with the second place team earning €2,000 and a similar chance to compete at the renowned venue. The challenge, now in its fourth year, is part of Vodafone's decade-long sponsorship of the Wimbledon Championship

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Senior Cork Hurler, Shane Kingston, has launched the Poc Tapa Challenge - with the call going out for all Rebel County GAA clubs to get in before the closing date on 25th June. The winners will get a hefty €5,000 for their club and the chance to play in Croke Park, with the runners-up receiving €1,000 and the same chance to tog-out at Headquarters. Now in it's third year, the competition is part of eir's five-year official sponsorship of the GAA All-Ireland Senior Hurling Championship. Inspired by the traditional "Poc Fada" competition, the challenge has been reimagined to reflect the fast-paced nature of the modern game – rewarding teamwork, precision and speed. How to enter the 'eir for all' Poc Tapa Challenge: Rules: The Poc Tapa Challenge is open to all GAA & Camogie clubs nationwide, welcoming participants of all skill levels and ages, whether you're a seasoned senior team or a rising squad just getting started, the eir for all Poc Tapa Challenge offers an exciting opportunity to showcase your talent, teamwork and community spirit. To enter, teams must film their fastest time completing the challenge on a smartphone, ensuring a stopwatch is visible throughout the footage. Videos must be filmed from the centre of the pitch and submit via X (formerly Twitter) @eir or Instagram @eir.ireland using the hashtags #eirforall and #PocTapa before Wednesday 25th June. Last year's final saw local Wexford rivals go head-to-head, with Craanford GAA Club emerging victor.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In test thirty-nine, both approaches successfully transformed the hurling challenge into different sports competitions. The manual version (METEOR: 0.1409) created a golf "Swing Away Challenge" with Joel Stone offering $10,000 and Augusta National play as prizes. The PSO-optimized version (Temperature: 0.8078, METEOR: 0.1032) created Roger Federer's "Tennis Teaser Challenge" with Wimbledon as the venue prize, achieving better originality despite being cut off earlier.

40)

SAMPLE:

The Irish Grand National is as much of a tradition at Easter as chocolate! The biggest names in racing look set to be involved and you'll find a FREE €5 Paddy Power shop bet inside your paper this Easter Monday - so pick a winner with your Irish Mirror this Fairyhouse! It is a fantastic race, which usually throws up an incredible story. There is also the matter of €500,000 being up for grabs, €270,000 of which will go to the winner. However, it is far from an easy race to win and this year's renewal looks as competitive as ever! Willie Mullins is incredibly aiming to complete a hat-trick of Grand National victories, having won both the English and Scottish Nationals already this month. Nick Rockett triumphed at Aintree at odds of 33/1 under the trainer's son Patrick before 9/1 shot Captain Cody (Harry Cobden) won at Ayr last weekend. The Closutton handler has four horses entered in the race - High Class Hero, Quai De Bourbon, So Majeste and Klarc Kent. Mullins won the 3m5f for the first time with Burrows Saint - ridden by Ruby Walsh - in 2019 before I Am Maximus gave him another victory two years ago under Paul Townend. It's 16 years since a UK-based trainer won the Irish Grand National, but they look to have a strong team coming over this term. The Rebecca Curtis-trained Haiti Couleurs, winner of the National Hunt Chase at Cheltenham last month, and the Festival’s Kim Muir Challenge Cup Amateur Jockeys' Handicap Chase runner-up Johnnywho, trained by Jonjo & AJ O’Neill. Both are towards the top of the market for the race alongside the Gavin Cromwell-trained Now Is The Hour. Bumper fairyhouse pullout, packed with pages of epic tips, features and content from your trusted Irish Mirror pundits PLUSA FREE €5 Shop Bet with Paddy Power for every reader this Grand National Monday!

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1026

Generated New Text:

The English Premier League is as integral to English culture as afternoon tea! The brightest stars in football are prepared for the upcoming games, and within the pages of your Daily Herald, this super Sunday, there's a FREE £5 betting coupon courtesy of Red Race! So choose your top team with the Herald this coming match day! It's an exciting season, with each match unveiling a new astonishing narrative. The League also boasts a colossal prize fund of £3 million, £1.5 million of which will be awarded to the champion's team. Despite this, emerging victorious from the league is a significant achievement given the fierce competition. Manchester United's manager, Alex Ferguson, is striving for a triple league success, having clinched the Scottish Premiership and the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

The Irish Grand National is as much of a tradition at Easter as chocolate! The biggest names in racing look set to be involved and you'll find a FREE €5 Paddy Power shop bet inside your paper this Easter Monday - so pick a winner with your Irish Mirror this Fairyhouse! It is a fantastic race, which usually throws up an incredible story. There is also the matter of €500,000 being up for grabs, €270,000 of which will go to the winner. However, it is far from an easy race to win and this year's renewal looks as competitive as ever! Willie Mullins is incredibly aiming to complete a hat-trick of Grand National victories, having won both the English and Scottish Nationals already this month. Nick Rockett triumphed at Aintree at odds of 33/1 under the trainer's son Patrick before 9/1 shot Captain Cody (Harry Cobden) won at Ayr last weekend. The Closutton handler has four horses entered in the race - High Class Hero, Quai De Bourbon, So Majeste and Klarc Kent. Mullins won the 3m5f for the first time with Burrows Saint - ridden by Ruby Walsh - in 2019 before I Am Maximus gave him another victory two years ago under Paul Townend. It's 16 years since a UK-based trainer won the Irish Grand National, but they look to have a strong team coming over this term. The Rebecca Curtis-trained Haiti Couleurs, winner of the National Hunt Chase at Cheltenham last month, and the Festival's Kim Muir Challenge Cup Amateur Jockeys' Handicap Chase runner-up Johnnywho, trained by Jonjo & AJ O'Neill. Both are towards the top of the market for the race alongside the Gavin Cromwell-trained Now Is The Hour. Bumper fairyhouse pullout, packed with pages of epic tips, features and content from your trusted Irish Mirror pundits PLUSA FREE €5 Shop Bet with Paddy Power for every reader this Grand National Monday!

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.78, Tokens: 109, METEOR: 0.0717

Temp: 0.91, Tokens: 124, METEOR: 0.0850

Temp: 0.86, Tokens: 127, METEOR: 0.1260

Temp: 0.92, Tokens: 128, METEOR: 0.0748

Temp: 0.75, Tokens: 122, METEOR: 0.0981

Temp: 0.71, Tokens: 129, METEOR: 0.1253

Temp: 0.94, Tokens: 131, METEOR: 0.1232

Temp: 0.94, Tokens: 109, METEOR: 0.0734

Temp: 0.95, Tokens: 114, METEOR: 0.1013

Temp: 0.88, Tokens: 100, METEOR: 0.0783

Temp: 0.70, Tokens: 132, METEOR: 0.1321

Temp: 0.92, Tokens: 124, METEOR: 0.1167

Temp: 0.95, Tokens: 100, METEOR: 0.0930

Temp: 0.88, Tokens: 110, METEOR: 0.1118

Temp: 0.91, Tokens: 100, METEOR: 0.0867

Temp: 0.70, Tokens: 123, METEOR: 0.1232

Temp: 0.90, Tokens: 117, METEOR: 0.0767

Temp: 0.92, Tokens: 100, METEOR: 0.0718

Temp: 0.83, Tokens: 111, METEOR: 0.0980

Temp: 0.89, Tokens: 100, METEOR: 0.0920

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7762

Max Tokens: 109

METEOR Score: 0.0768

Generated Text:

The Kentucky Derby is as iconic to the first Saturday of May as mint juleps! The crème de la crème of equestrian excellence are set to take part, and within this weekend's edition of your Louisville Gazette, you'll discover a FREE $5 Churchill Downs betting voucher - so make your mark with your Louisville Gazette this Derby Day! It's an extraordinary competition, known for producing incredible tales. Up for grabs is a purse of $3 million, with $1.8 million reserved for the victor. But winning is

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

The Irish Grand National is as much of a tradition at Easter as chocolate! The biggest names in racing look set to be involved and you'll find a FREE €5 Paddy Power shop bet inside your paper this Easter Monday - so pick a winner with your Irish Mirror this Fairyhouse! It is a fantastic race, which usually throws up an incredible story. There is also the matter of €500,000 being up for grabs, €270,000 of which will go to the winner. However, it is far from an easy race to win and this year's renewal looks as competitive as ever! Willie Mullins is incredibly aiming to complete a hat-trick of Grand National victories, having won both the English and Scottish Nationals already this month. Nick Rockett triumphed at Aintree at odds of 33/1 under the trainer's son Patrick before 9/1 shot Captain Cody (Harry Cobden) won at Ayr last weekend. The Closutton handler has four horses entered in the race - High Class Hero, Quai De Bourbon, So Majeste and Klarc Kent. Mullins won the 3m5f for the first time with Burrows Saint - ridden by Ruby Walsh - in 2019 before I Am Maximus gave him another victory two years ago under Paul Townend. It's 16 years since a UK-based trainer won the Irish Grand National, but they look to have a strong team coming over this term. The Rebecca Curtis-trained Haiti Couleurs, winner of the National Hunt Chase at Cheltenham last month, and the Festival's Kim Muir Challenge Cup Amateur Jockeys' Handicap Chase runner-up Johnnywho, trained by Jonjo & AJ O'Neill. Both are towards the top of the market for the race alongside the Gavin Cromwell-trained Now Is The Hour. Bumper fairyhouse pullout, packed with pages of epic tips, features and content from your trusted Irish Mirror pundits PLUSA FREE €5 Shop Bet with Paddy Power for every reader this Grand National Monday!

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the fortieth test with the Irish Grand National advertisement, both approaches successfully transformed the racing promotion while maintaining the enthusiastic tone and betting offer elements. The manual approach (METEOR: 0.1026) reimagined the scenario as an English Premier League promotion with a free betting coupon from the Daily Herald, effectively shifting from horse racing to football while preserving key elements like prize money, competitive analysis, and free betting offers. The PSO-optimized version (Temperature: 0.7762, Max Tokens: 109, METEOR: 0.0768) achieved better originality by creating a Kentucky Derby promotion with mint julep references and Churchill Downs vouchers, though it was cut off earlier due to token limitations.

41)

SAMPLE:

A Cork man said he was inspired to open up his own restaurant in the city after seeing a clear gap in the market when it came to traditional African cuisine. Nigerian native Uzo Nwokocha is not a chef, nor has he any background in business. He's worked for years as a chemical engineer with Pfizer but was struck with the idea of his own restaurant after friends visited him in Cork and he had to bring them to Portuguese peri-peri chicken chain Nando's as the closest thing to African food. Fast forward a year and Uzo, who lives in Farran with his wife and their two teenage daughters, is now the proud owner of Fingas Afro restaurant and lounge – and he's welcoming everyone to try the delicious menu, which blends classic and modern dishes. They've only been open a month, but Uzo said that every weekend has been "packed" with plenty of repeat customers loving the menu of traditional Nigerian dishes including Eforiro stew, Jollof rice and Uzo's personal favourite Egusi soup. Fingas is at 20 Pope's Quay, in a property which was previously home to Khyber Cafe and Sri Lankan restaurant Nala's before it. It has been given a complete makeover into an inviting space for a daytime snack or dinner and drinks in the evening.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1402

Generated New Text:

A Dublin woman found herself propelled into entrepreneurship after discovering an absence of authentic Israeli gourmet in the city. Tamar Cohen, originally from Tel Aviv, is not a culinary expert and doesn't hail from a business background. Her career spanned decades as a software developer in Sage, yet she was inspired to start her own restaurant when her extensive international network visited, only to find the nearest Middle Eastern option to be a falafel food truck. Fast forward a dozen months and Tamar, residing in Stillorgan with her husband and twin college-going sons, is the proud proprietor of Tahini Tel Aviv, a warm and vibrant eatery – inviting everyone to explore their menu, which harmonises traditional and contemporary flavours. Opened merely five weeks ago, T

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A Cork man said he was inspired to open up his own restaurant in the city after seeing a clear gap in the market when it came to traditional African cuisine. Nigerian native Uzo Nwokocha is not a chef, nor has he any background in business. He's worked for years as a chemical engineer with Pfizer but was struck with the idea of his own restaurant after friends visited him in Cork and he had to bring them to Portuguese peri-peri chicken chain Nando's as the closest thing to African food. Fast forward a year and Uzo, who lives in Farran with his wife and their two teenage daughters, is now the proud owner of Fingas Afro restaurant and lounge – and he's welcoming everyone to try the delicious menu, which blends classic and modern dishes. They've only been open a month, but Uzo said that every weekend has been "packed" with plenty of repeat customers loving the menu of traditional Nigerian dishes including Eforiro stew, Jollof rice and Uzo's personal favourite Egusi soup. Fingas is at 20 Pope's Quay, in a property which was previously home to Khyber Cafe and Sri Lankan restaurant Nala's before it. It has been given a complete makeover into an inviting space for a daytime snack or dinner and drinks in the evening.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.98, Tokens: 139, METEOR: 0.1501

Temp: 0.90, Tokens: 101, METEOR: 0.1209

Temp: 0.78, Tokens: 134, METEOR: 0.1431

Temp: 0.99, Tokens: 106, METEOR: 0.1045

Temp: 0.76, Tokens: 142, METEOR: 0.1548

Temp: 1.00, Tokens: 150, METEOR: 0.1640

Temp: 1.00, Tokens: 100, METEOR: 0.0990

Temp: 0.80, Tokens: 128, METEOR: 0.2362

Temp: 0.95, Tokens: 100, METEOR: 0.1137

Temp: 0.84, Tokens: 145, METEOR: 0.1967

Temp: 1.00, Tokens: 134, METEOR: 0.1243

Temp: 1.00, Tokens: 100, METEOR: 0.1178

Temp: 0.84, Tokens: 122, METEOR: 0.1288

Temp: 0.96, Tokens: 100, METEOR: 0.1020

Temp: 0.91, Tokens: 144, METEOR: 0.1077

Temp: 1.00, Tokens: 119, METEOR: 0.1184

Temp: 1.00, Tokens: 100, METEOR: 0.0769

Stopping search: Swarm best position change less than 1e-08

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 100

METEOR Score: 0.1054

Generated Text:

When North Carolina local Sylvia Foster realized there were no places offering her beloved Austrian dishes, she decided to take matters into her own hands. Despite her background in environmental science and zero experience in the hospitality industry, Sylvia was determined. Her idea was ignited when she struggled to find a place serving Schnitzel and Apfelstrudel for her Austrian friends visiting Raleigh. Fast forward two years, Sylvia, now residing in Fuquay-Varina with her husband and two kids, is the proud owner

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A Cork man said he was inspired to open up his own restaurant in the city after seeing a clear gap in the market when it came to traditional African cuisine. Nigerian native Uzo Nwokocha is not a chef, nor has he any background in business. He's worked for years as a chemical engineer with Pfizer but was struck with the idea of his own restaurant after friends visited him in Cork and he had to bring them to Portuguese peri-peri chicken chain Nando's as the closest thing to African food. Fast forward a year and Uzo, who lives in Farran with his wife and their two teenage daughters, is now the proud owner of Fingas Afro restaurant and lounge – and he's welcoming everyone to try the delicious menu, which blends classic and modern dishes. They've only been open a month, but Uzo said that every weekend has been "packed" with plenty of repeat customers loving the menu of traditional Nigerian dishes including Eforiro stew, Jollof rice and Uzo's personal favourite Egusi soup. Fingas is at 20 Pope's Quay, in a property which was previously home to Khyber Cafe and Sri Lankan restaurant Nala's before it. It has been given a complete makeover into an inviting space for a daytime snack or dinner and drinks in the evening.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-first test with the restaurant opening story, both approaches successfully transformed the entrepreneur narrative while maintaining the personal journey and cultural cuisine elements. The manual approach (METEOR: 0.1402) reimagined the scenario as Tamar Cohen from Tel Aviv opening an Israeli restaurant called Tahini Tel Aviv in Dublin, effectively shifting from Nigerian to Israeli cuisine while preserving key elements like the professional career transition and personal motivation. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 100, METEOR: 0.1054) achieved better originality with North Carolina resident Sylvia Foster opening an Austrian restaurant featuring schnitzel and apfelstrudel, though it was cut off earlier due to token limitations.

42)

SAMPLE:

Seafood - of course - is big over the Easter weekend and it's traditionally been a time when Fish n'Chips from our favourite chippers is the go to choice. Local fry shops do a roaring trade at this time of year, and many fish supper fans will be posting pics to social media or chatting online about the best spots in Ireland. A recent Top 10 list put together by online gaming spot Betway was based on an analysis of social media sites - primarily Instagram, TripAdvisor and Google Reviews. They crunched the numbers and came up with the most talked-about and most positively reviewed chippers in Ireland over the past two years. And while three places in Munster - two in Cork and one in Kerry - made the Top 10, the list makes bitter reading for Leesiders as it still includes Jackie Lennox's on the Bandon Road, which, of course, closed in October with the final weekend seeing crazy queues around the block. Such is the lingering sadness around that cataclysmic event, fans of the old Lennox's have been posting links on social media to the still live Jackie Lennox's website, with one saying: "I know they are gone, I know I can't order a Jackie Deluxe, but seeing the video with the chips and the old Jackie's branded paper bags is a comfort."

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1207

Generated New Text:

Café culture during fall at Paris taps into the soul like no other city. Locals swear by heavenly hot chocolate from their favorite patisseries. Bakeries experience bustling business during these months as Parisians and visiting tourists post photos on social platforms such as Instagram and popular review sites like TripAdvisor or Google Reviews, while discussing their top café choices across France's capital. A "Top 10" list composed by online café connoisseurs, compiled data from these sites to determine the most buzzing places based on past two years' chatter and highest-rated reviews. Provocatively, three nominations hailed from Marais - a district famous for its patisseries. The most noted was Patisserie Le Petite Marais that formally closed just a year

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Seafood - of course - is big over the Easter weekend and it's traditionally been a time when Fish n'Chips from our favourite chippers is the go to choice. Local fry shops do a roaring trade at this time of year, and many fish supper fans will be posting pics to social media or chatting online about the best spots in Ireland. A recent Top 10 list put together by online gaming spot Betway was based on an analysis of social media sites - primarily Instagram, TripAdvisor and Google Reviews. They crunched the numbers and came up with the most talked-about and most positively reviewed chippers in Ireland over the past two years. And while three places in Munster - two in Cork and one in Kerry - made the Top 10, the list makes bitter reading for Leesiders as it still includes Jackie Lennox's on the Bandon Road, which, of course, closed in October with the final weekend seeing crazy queues around the block. Such is the lingering sadness around that cataclysmic event, fans of the old Lennox's have been posting links on social media to the still live Jackie Lennox's website, with one saying: "I know they are gone, I know I can't order a Jackie Deluxe, but seeing the video with the chips and the old Jackie's branded paper bags is a comfort."

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.71, Tokens: 132, METEOR: 0.1260

Temp: 0.72, Tokens: 106, METEOR: 0.1547

Temp: 0.81, Tokens: 118, METEOR: 0.1636

Temp: 0.99, Tokens: 141, METEOR: 0.2255

Temp: 0.78, Tokens: 107, METEOR: 0.1508

Temp: 0.75, Tokens: 115, METEOR: 0.1786

Temp: 0.70, Tokens: 100, METEOR: 0.1418

Temp: 0.92, Tokens: 100, METEOR: 0.1299

Temp: 0.82, Tokens: 123, METEOR: 0.1653

Temp: 0.70, Tokens: 128, METEOR: 0.1942

Temp: 0.75, Tokens: 119, METEOR: 0.1737

Temp: 0.70, Tokens: 102, METEOR: 0.1427

Temp: 0.95, Tokens: 100, METEOR: 0.1560

Temp: 0.70, Tokens: 115, METEOR: 0.1420

Temp: 0.70, Tokens: 134, METEOR: 0.1778

Temp: 0.73, Tokens: 128, METEOR: 0.1966

Temp: 0.70, Tokens: 111, METEOR: 0.1541

Temp: 0.87, Tokens: 112, METEOR: 0.1702

Temp: 0.70, Tokens: 116, METEOR: 0.1703

Temp: 0.71, Tokens: 132, METEOR: 0.2230

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7132

Max Tokens: 132

METEOR Score: 0.2430

Generated Text:

Halloween is synonymous with sweets in most households, with many people saying that chocolates from their favourite confectioners are their go-to treat. Local sweet shops see a significant increase in business during this time of year, with many candy enthusiasts sharing their favourite places on social media. A recent list of the Top 10 sweet shops was compiled by online platform Sweet Lovers, based on an analysis of social media posts - primarily on Facebook, Yelp, and Google Reviews. They sifted through the data and identified the most positively reviewed and most discussed sweet shops in the past two years. While three locations in Yorkshire - two in Leeds and one in Sheffield - made the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Seafood - of course - is big over the Easter weekend and it's traditionally been a time when Fish n'Chips from our favourite chippers is the go to choice. Local fry shops do a roaring trade at this time of year, and many fish supper fans will be posting pics to social media or chatting online about the best spots in Ireland. A recent Top 10 list put together by online gaming spot Betway was based on an analysis of social media sites - primarily Instagram, TripAdvisor and Google Reviews. They crunched the numbers and came up with the most talked-about and most positively reviewed chippers in Ireland over the past two years. And while three places in Munster - two in Cork and one in Kerry - made the Top 10, the list makes bitter reading for Leesiders as it still includes Jackie Lennox's on the Bandon Road, which, of course, closed in October with the final weekend seeing crazy queues around the block. Such is the lingering sadness around that cataclysmic event, fans of the old Lennox's have been posting links on social media to the still live Jackie Lennox's website, with one saying: "I know they are gone, I know I can't order a Jackie Deluxe, but seeing the video with the chips and the old Jackie's branded paper bags is a comfort."

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-second test with the fish and chips article, both approaches successfully transformed the food tradition story while maintaining the social media analysis and nostalgic elements. The manual approach (METEOR: 0.1207) reimagined the scenario as Parisian café culture and hot chocolate, effectively shifting from Irish fish and chips to French pastries while preserving key elements like the top 10 list based on social media reviews and the closure of a beloved establishment (Patisserie Le Petite Marais). The PSO-optimized version (Temperature: 0.7132, Max Tokens: 132, METEOR: 0.2430) created a Halloween candy shop scenario in Yorkshire, though it surprisingly had a higher METEOR score (indicating less originality) despite using a lower temperature parameter.

43)

SAMPLE:

Get ready to toast the ultimate celebration of Irish whiskey and spirits! The third annual Cork Whiskey Fest returns from 21st to 23rd March 2025, taking over bars and venues across MacCurtain Street, Cork City. The festival was officially launched at The Shelbourne Bar with key sponsors Irish Distillers Pernod Ricard, The Shelbourne Bar, and IrishMalts.com. Over three unforgettable days, indulge in expert-led tastings featuring rare and premium whiskeys and limited-edition releases, behind-the-scenes tours, and special events. A festival highlight is the Brand Expo & Socials at The Metropole, which will host 50 whiskey distilleries and brands over the two evenings. They will offer complimentary samples of their finest creations alongside mixers and food bites. This year distilleries will also showcase their gins, rums, vodkas and poitíns. Many are served by the distillers, blenders, and brand owners themselves - a rare chance to engage with the makers behind the magic. The expos take place on Friday, March 21st, and Saturday, March 22nd, from 7:30 PM to 11:00 PM. With 20+ events on the lineup—including masterclasses, distillery tours, exclusive tastings, and plenty of craic—Cork Whiskey Fest is a must for whiskey aficionados, those who enjoy a wee drop and curious newcomers alike.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1596

Generated New Text:

Lovers of craft beer, take note! The sixth annual Hobart Brew Bash is on from 31st July to 2nd August 2030, taking over local brewhouses and pubs in Salamanca Place, Hobart City. The official launch will be at the Cascade Brewery, with chief sponsors Boags, Cascade, and BeersofTasmania.com. Over an immersive three-day affair, experience professional tastings featuring unique and high-grade beers, limited runs, exclusive tours, and a plethora of events. Not to be missed is the Beer Exposition & Networking session at The Henry Jones, hosting 50 craft beer breweries and brands across two nights. Complimentary samplings of their best concoctions will be offered,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Get ready to toast the ultimate celebration of Irish whiskey and spirits! The third annual Cork Whiskey Fest returns from 21st to 23rd March 2025, taking over bars and venues across MacCurtain Street, Cork City. The festival was officially launched at The Shelbourne Bar with key sponsors Irish Distillers Pernod Ricard, The Shelbourne Bar, and IrishMalts.com. Over three unforgettable days, indulge in expert-led tastings featuring rare and premium whiskeys and limited-edition releases, behind-the-scenes tours, and special events. A festival highlight is the Brand Expo & Socials at The Metropole, which will host 50 whiskey distilleries and brands over the two evenings. They will offer complimentary samples of their finest creations alongside mixers and food bites. This year distilleries will also showcase their gins, rums, vodkas and poitíns. Many are served by the distillers, blenders, and brand owners themselves - a rare chance to engage with the makers behind the magic. The expos take place on Friday, March 21st, and Saturday, March 22nd, from 7:30 PM to 11:00 PM. With 20+ events on the lineup—including masterclasses, distillery tours, exclusive tastings, and plenty of craic—Cork Whiskey Fest is a must for whiskey aficionados, those who enjoy a wee drop and curious newcomers alike.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.92, Tokens: 141, METEOR: 0.1459

Temp: 0.79, Tokens: 110, METEOR: 0.1106

Temp: 0.88, Tokens: 129, METEOR: 0.1159

Temp: 0.99, Tokens: 142, METEOR: 0.1647

Temp: 0.93, Tokens: 106, METEOR: 0.0853

Temp: 0.81, Tokens: 134, METEOR: 0.1520

Temp: 0.86, Tokens: 112, METEOR: 0.1284

Temp: 0.97, Tokens: 117, METEOR: 0.1077

Temp: 1.00, Tokens: 147, METEOR: 0.1959

Temp: 0.94, Tokens: 110, METEOR: 0.1031

Temp: 0.82, Tokens: 125, METEOR: 0.1384

Temp: 0.88, Tokens: 110, METEOR: 0.1004

Temp: 0.99, Tokens: 110, METEOR: 0.0874

Temp: 1.00, Tokens: 137, METEOR: 0.1398

Temp: 0.94, Tokens: 110, METEOR: 0.1753

Temp: 0.83, Tokens: 121, METEOR: 0.1109

Temp: 0.90, Tokens: 107, METEOR: 0.1263

Temp: 0.98, Tokens: 106, METEOR: 0.0822

Temp: 1.00, Tokens: 121, METEOR: 0.1460

Temp: 0.95, Tokens: 108, METEOR: 0.0743

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9469

Max Tokens: 108

METEOR Score: 0.1059

Generated Text:

Raise a glass to the grand celebration of Scottish whisky at the fifth annual Edinburgh Whisky Carnival, set to run from 28th to 30th April 2027! This monumental event will spread across numerous taverns and venues along the historic Royal Mile, Edinburgh. Kicked off at The World's End Pub with proud sponsors Macallan, The World's End Pub, and WhiskyWorld.com, the three-day toast will bring unparalleled enjoyment with specialist-led samplings of exceptional and rare malts. Make sure not to miss the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Get ready to toast the ultimate celebration of Irish whiskey and spirits! The third annual Cork Whiskey Fest returns from 21st to 23rd March 2025, taking over bars and venues across MacCurtain Street, Cork City. The festival was officially launched at The Shelbourne Bar with key sponsors Irish Distillers Pernod Ricard, The Shelbourne Bar, and IrishMalts.com. Over three unforgettable days, indulge in expert-led tastings featuring rare and premium whiskeys and limited-edition releases, behind-the-scenes tours, and special events. A festival highlight is the Brand Expo & Socials at The Metropole, which will host 50 whiskey distilleries and brands over the two evenings. They will offer complimentary samples of their finest creations alongside mixers and food bites. This year distilleries will also showcase their gins, rums, vodkas and poitíns. Many are served by the distillers, blenders, and brand owners themselves - a rare chance to engage with the makers behind the magic. The expos take place on Friday, March 21st, and Saturday, March 22nd, from 7:30 PM to 11:00 PM. With 20+ events on the lineup—including masterclasses, distillery tours, exclusive tastings, and plenty of craic—Cork Whiskey Fest is a must for whiskey aficionados, those who enjoy a wee drop and curious newcomers alike.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-third test with the Cork Whiskey Fest announcement, both approaches successfully transformed the festival promotion while maintaining the enthusiastic tone and event structure. The manual approach (METEOR: 0.1596) reimagined the scenario as the "Hobart Brew Bash" in Tasmania, effectively shifting from Irish whiskey to Australian craft beer while preserving key elements like the three-day format, venue takeover, and expert-led tastings. The PSO-optimized version (Temperature: 0.9469, Max Tokens: 108, METEOR: 0.1059) achieved better originality with an Edinburgh Whisky Carnival featuring Scottish malts along the Royal Mile, though it was cut off mid-description due to token limitations.

44)

SAMPLE:

One of Cork's favourite family-run takeaway spots has been recognised as one of the best independent restaurants in the country - and could be crowned with the title next month. Koto, the very popular Asian fusion restaurant on Carey's Lane in the city centre, is in the running for Deliveroo's Independent Restaurant of the Year award. It's been nominated before, and regularly appears in lists of Ireland's favourite takeaway faves. The award-winning restaurant has been one of the best Asian eateries in Cork since it opened in 2017, and is up against 25 Irish and UK spots for the title – and voting is open online for foodie fans to let their voices be heard. Last year, the Independent Restaurant of the Year award was scooped by Yeero's in Dublin. Koto is one of 14 Cork spots shortlisted for the delivery app's prestigious awards show this year. The categories range from Best Chinese to Best Salads, including a number of very well-known restaurants and newcomers on the Cork food scene. Dosa Spot is shortlisted for Best Indian & Lebanese Local food lovers can cast their votes here to back their best-loved restaurants and those who take part are automatically entered into a draw to win €150 to spend on Deliveroo. Voting closes on May 9.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2256

Generated New Text:

A beloved family-led bistro in Edinburgh has been identified as one of the leading independent establishments across the nation - and could possibly seize the award next month. The much-loved Mediterranean kitchen, Zara's, situated on Rose Street in the city's heart, is vying for the Uber Eats Independent Restaurant of the Year award. It's a previous nominee and regularly features in lists of Scotland's top takeout spots. The acclaimed bistro, ever since its inauguration in 2015, has remained unmatched in Mediterranean fare in Edinburgh, competing against 27 other nominees from Scotland and the UK for the prestigious honour - with voting now open for the culinary enthusiasts. Last year, the accolade was taken by Athens of Dundee. Zara's

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

One of Cork's favourite family-run takeaway spots has been recognised as one of the best independent restaurants in the country - and could be crowned with the title next month. Koto, the very popular Asian fusion restaurant on Carey's Lane in the city centre, is in the running for Deliveroo's Independent Restaurant of the Year award. It's been nominated before, and regularly appears in lists of Ireland's favourite takeaway faves. The award-winning restaurant has been one of the best Asian eateries in Cork since it opened in 2017, and is up against 25 Irish and UK spots for the title – and voting is open online for foodie fans to let their voices be heard. Last year, the Independent Restaurant of the Year award was scooped by Yeero's in Dublin. Koto is one of 14 Cork spots shortlisted for the delivery app's prestigious awards show this year. The categories range from Best Chinese to Best Salads, including a number of very well-known restaurants and newcomers on the Cork food scene. Dosa Spot is shortlisted for Best Indian & Lebanese Local food lovers can cast their votes here to back their best-loved restaurants and those who take part are automatically entered into a draw to win €150 to spend on Deliveroo. Voting closes on May 9.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.85, Tokens: 115, METEOR: 0.1546

Temp: 0.72, Tokens: 141, METEOR: 0.1414

Temp: 0.94, Tokens: 132, METEOR: 0.1595

Temp: 0.84, Tokens: 115, METEOR: 0.1347

Temp: 0.93, Tokens: 130, METEOR: 0.1561

Temp: 0.82, Tokens: 134, METEOR: 0.1748

Temp: 0.70, Tokens: 122, METEOR: 0.2164

Temp: 0.86, Tokens: 145, METEOR: 0.1712

Temp: 0.81, Tokens: 112, METEOR: 0.1653

Temp: 0.90, Tokens: 139, METEOR: 0.1972

Temp: 0.81, Tokens: 136, METEOR: 0.2401

Temp: 0.70, Tokens: 117, METEOR: 0.1325

Temp: 0.82, Tokens: 142, METEOR: 0.1688

Temp: 0.77, Tokens: 113, METEOR: 0.1712

Temp: 0.87, Tokens: 135, METEOR: 0.1460

Temp: 0.83, Tokens: 122, METEOR: 0.1653

Temp: 0.70, Tokens: 114, METEOR: 0.1409

Temp: 0.81, Tokens: 128, METEOR: 0.1534

Temp: 0.75, Tokens: 114, METEOR: 0.1319

Temp: 0.81, Tokens: 128, METEOR: 0.2102

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7515

Max Tokens: 114

METEOR Score: 0.1297

Generated Text:

A beloved independent café in Austin has been nominated as one of the top independent coffee shops in the nation - with the potential to seize the prize next month. Java Joint, the much-loved coffee house located on Red River Street in downtown Austin, is a contender for DoorDash's Independent Coffee Shop of the Year award. It has been nominated previously, and consistently ranks among favorite local coffee spots in Texas. Since its opening in 2015, Java Joint has solidified its position as a premier coffee destination in Austin, competing against 30 other US coffee shops for the

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

One of Cork's favourite family-run takeaway spots has been recognised as one of the best independent restaurants in the country - and could be crowned with the title next month. Koto, the very popular Asian fusion restaurant on Carey's Lane in the city centre, is in the running for Deliveroo's Independent Restaurant of the Year award. It's been nominated before, and regularly appears in lists of Ireland's favourite takeaway faves. The award-winning restaurant has been one of the best Asian eateries in Cork since it opened in 2017, and is up against 25 Irish and UK spots for the title – and voting is open online for foodie fans to let their voices be heard. Last year, the Independent Restaurant of the Year award was scooped by Yeero's in Dublin. Koto is one of 14 Cork spots shortlisted for the delivery app's prestigious awards show this year. The categories range from Best Chinese to Best Salads, including a number of very well-known restaurants and newcomers on the Cork food scene. Dosa Spot is shortlisted for Best Indian & Lebanese Local food lovers can cast their votes here to back their best-loved restaurants and those who take part are automatically entered into a draw to win €150 to spend on Deliveroo. Voting closes on May 9.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-fourth test with the Koto restaurant nomination, both approaches successfully transformed the award announcement while maintaining the style and voting elements. The manual approach (METEOR: 0.2256) reimagined the scenario as Zara's Mediterranean bistro in Edinburgh competing for an Uber Eats award, though it had a relatively high METEOR score indicating less originality. The PSO-optimized version (Temperature: 0.7515, Max Tokens: 114, METEOR: 0.1297) achieved significantly better originality by creating Java Joint coffee shop in Austin competing for a DoorDash award, effectively changing the setting from Ireland to Texas and the cuisine from Asian fusion to coffee, though it was also cut off before completion due to token limitations.

45)

SAMPLE:

A popular Cork cafe company is opening its 8th Leeside location in another exciting expansion for the brand. Priory Coffee Co. is opening in Ballincollig on Monday at their newly refurbished location in the heart of the town The stylish new coffee shop is on Main Street, at the former Ó Crualaoí butchers building and neighbouring the O'Mahony's bar at the Darby Arms. Priory Coffee have very popular cafes across Cork, including North Main Street and MacCurtain Street in the city centre, Youghal, Riverstick, Mallow, Fermoy and in Crosshaven. The Cork-owned brand has been growing as a very popular name as a great lunch spot, brewing fresh Badger and Dodo beans and offering a fantastic food menu of savoury and sweet treats. In a sneak peek, they shared that during the refurbishment of the Ballincollig butcher's shop, they retained the beautiful mosaic wall that was part of Ó Crualaoí's. Their new location is opening at 8am on Monday, and in an excited post on social media, Priory announced to fans: "We can't wait to welcome you in!" A new opening will be welcome news after a string of cafe closures over the past 12 months, with the likes of Perry Street and Nash 19 disappearing from the city centre. In Ballingcollig, the Kabin Cafe announced its closure last month. Less than a year after opening their second cafe in Ballincollig, which was enthusiastically welcomed by locals in the thriving town, rising costs and an ongoing cost of living squeeze meant they had to shut the doors.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1093

Generated New Text:

Esteemed artisanal bakery, Good Grains Bakery, will be unveiling its new branch in pristine Newbridge next Tuesday, in a beautifully renovated building in the bustling market centre. Situated on Market Street, former McAvoy's Green Grocers and right beside Johnson's pub at The King's Head Inn, the location is primely placed. This exciting venture for the local-owned label adds to their already popular bakeries in different corners of the Shire, from Main Street and Baker's lane, to quaint shops in Wellington, Hogsmeade, North Harbor and Brierly. Good Grains has earned a reputation for its spectacular variety of fresh breads and indulgent pastries, using locally-sourced ingredients. The staff at Newbridge

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

A popular Cork cafe company is opening its 8th Leeside location in another exciting expansion for the brand. Priory Coffee Co. is opening in Ballincollig on Monday at their newly refurbished location in the heart of the town The stylish new coffee shop is on Main Street, at the former Ó Crualaoí butchers building and neighbouring the O'Mahony's bar at the Darby Arms. Priory Coffee have very popular cafes across Cork, including North Main Street and MacCurtain Street in the city centre, Youghal, Riverstick, Mallow, Fermoy and in Crosshaven. The Cork-owned brand has been growing as a very popular name as a great lunch spot, brewing fresh Badger and Dodo beans and offering a fantastic food menu of savoury and sweet treats. In a sneak peek, they shared that during the refurbishment of the Ballincollig butcher's shop, they retained the beautiful mosaic wall that was part of Ó Crualaoí's. Their new location is opening at 8am on Monday, and in an excited post on social media, Priory announced to fans: "We can't wait to welcome you in!" A new opening will be welcome news after a string of cafe closures over the past 12 months, with the likes of Perry Street and Nash 19 disappearing from the city centre. In Ballingcollig, the Kabin Cafe announced its closure last month. Less than a year after opening their second cafe in Ballincollig, which was enthusiastically welcomed by locals in the thriving town, rising costs and an ongoing cost of living squeeze meant they had to shut the doors.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 146, METEOR: 0.1296

Temp: 0.74, Tokens: 141, METEOR: 0.1056

Temp: 0.75, Tokens: 122, METEOR: 0.0898

Temp: 0.70, Tokens: 129, METEOR: 0.0914

Temp: 0.95, Tokens: 113, METEOR: 0.0920

Temp: 0.80, Tokens: 116, METEOR: 0.0856

Temp: 0.86, Tokens: 150, METEOR: 0.1117

Temp: 0.70, Tokens: 108, METEOR: 0.0878

Temp: 0.73, Tokens: 129, METEOR: 0.1041

Temp: 1.00, Tokens: 122, METEOR: 0.0937

Temp: 0.79, Tokens: 101, METEOR: 0.0715

Temp: 0.88, Tokens: 147, METEOR: 0.1322

Temp: 0.70, Tokens: 100, METEOR: 0.0861

Temp: 0.74, Tokens: 119, METEOR: 0.1080

Temp: 0.96, Tokens: 121, METEOR: 0.1039

Temp: 0.79, Tokens: 100, METEOR: 0.0755

Temp: 0.84, Tokens: 143, METEOR: 0.1136

Temp: 0.71, Tokens: 100, METEOR: 0.0924

Temp: 0.74, Tokens: 107, METEOR: 0.0775

Temp: 0.93, Tokens: 107, METEOR: 0.0878

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.7938

Max Tokens: 101

METEOR Score: 0.0832

Generated Text:

Manchester's beloved bakery chain, Bread & Butter will inaugurate its 7th location this Tuesday in Chorlton, marking another exciting growth for the enterprise. The new branch will be situated in the vibrant centre of the town, at the location formerly occupied by Smith's grocery store, now a freshly renovated space adjacent to the popular Chorlton Green. Bread & Butter has established a strong presence throughout Manchester, with outlets scattered across the city, including Northern Quarter and Deansgate. Their reputation

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

A popular Cork cafe company is opening its 8th Leeside location in another exciting expansion for the brand. Priory Coffee Co. is opening in Ballincollig on Monday at their newly refurbished location in the heart of the town The stylish new coffee shop is on Main Street, at the former Ó Crualaoí butchers building and neighbouring the O'Mahony's bar at the Darby Arms. Priory Coffee have very popular cafes across Cork, including North Main Street and MacCurtain Street in the city centre, Youghal, Riverstick, Mallow, Fermoy and in Crosshaven. The Cork-owned brand has been growing as a very popular name as a great lunch spot, brewing fresh Badger and Dodo beans and offering a fantastic food menu of savoury and sweet treats. In a sneak peek, they shared that during the refurbishment of the Ballincollig butcher's shop, they retained the beautiful mosaic wall that was part of Ó Crualaoí's. Their new location is opening at 8am on Monday, and in an excited post on social media, Priory announced to fans: "We can't wait to welcome you in!" A new opening will be welcome news after a string of cafe closures over the past 12 months, with the likes of Perry Street and Nash 19 disappearing from the city centre. In Ballingcollig, the Kabin Cafe announced its closure last month. Less than a year after opening their second cafe in Ballincollig, which was enthusiastically welcomed by locals in the thriving town, rising costs and an ongoing cost of living squeeze meant they had to shut the doors.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-fifth test with the cafe expansion story, both approaches successfully transformed the business opening announcement while maintaining the style and location details. The manual approach (METEOR: 0.1093) reimagined the scenario as "Good Grains Bakery" opening in Newbridge with locations in fictional places like Wellington, Hogsmeade, and North Harbor, effectively shifting from coffee to artisanal baking while preserving key elements like the building's history and prime location. The PSO-optimized version (Temperature: 0.7938, Max Tokens: 101, METEOR: 0.0832) achieved better originality with "Bread & Butter" bakery opening in Manchester's Chorlton district, though it was cut off before completion due to token limitations.

46)

SAMPLE:

Shoppers anxiously awaiting summer weather good enough for al fresco dining say they have found their perfect tableware ahead of BBQ season. Marks and Spencer has added a set of 4 "gorgeous picnic plates" to their range of summer homeware, and decor fans obsessed with the colourful collection say "bring on summer" for some outdoor dining. The durable dinner plates have a statement boho-inspired design and, at nearly 28 cm wide, are a practical option for any meal. The set of 4 plates is made from melamine, so they're sturdy enough to be used outdoors, but the patterns are stylish enough that you may want to use them for dinners every day. M&S's colourful crockery is €20 online here. The retailer also has other picnic bits in the boho style too, and sells a popular set of side plates for €16 and a set of pasta bowls for €20 if you want to complete the collection. Plenty of homeware retailers are selling some super summer tableware perfect for outdoor dining. Over at Next, this Set of 4 Tapas Plates feature two cute designs and are the "perfect size for party nibbles."

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.2410

Generated New Text:

Music lovers eagerly anticipating the outdoor concert season have discovered their ultimate accessory ahead of the summer beats. Urban Outfitters has debuted a “charming blanket-tote combo" in their range of festival essentials, and festival-goers charmed by the multi-functional item say "bring on the music" for some open-air enjoyment. The versatile blanket has a dramatic patchwork-inspired design and, at nearly one square meter, is ample space for a picnic or party. The blanket-tote is made from durable canvas, so it's sturdy enough for outdoor use, but the patterns are chic enough that you may want to use it for indoor gatherings too. Urban Outfitters' trendy festival accessory is $35 online here. The store also offers other outdoor necessities

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Shoppers anxiously awaiting summer weather good enough for al fresco dining say they have found their perfect tableware ahead of BBQ season. Marks and Spencer has added a set of 4 "gorgeous picnic plates" to their range of summer homeware, and decor fans obsessed with the colourful collection say "bring on summer" for some outdoor dining. The durable dinner plates have a statement boho-inspired design and, at nearly 28 cm wide, are a practical option for any meal. The set of 4 plates is made from melamine, so they're sturdy enough to be used outdoors, but the patterns are stylish enough that you may want to use them for dinners every day. M&S's colourful crockery is €20 online here. The retailer also has other picnic bits in the boho style too, and sells a popular set of side plates for €16 and a set of pasta bowls for €20 if you want to complete the collection. Plenty of homeware retailers are selling some super summer tableware perfect for outdoor dining. Over at Next, this Set of 4 Tapas Plates feature two cute designs and are the "perfect size for party nibbles."

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.95, Tokens: 114, METEOR: 0.1527

Temp: 0.83, Tokens: 118, METEOR: 0.1372

Temp: 0.79, Tokens: 108, METEOR: 0.1881

Temp: 0.93, Tokens: 130, METEOR: 0.1528

Temp: 0.98, Tokens: 139, METEOR: 0.2182

Temp: 0.79, Tokens: 100, METEOR: 0.1568

Temp: 0.93, Tokens: 128, METEOR: 0.2213

Temp: 0.70, Tokens: 118, METEOR: 0.2203

Temp: 1.00, Tokens: 108, METEOR: 0.0996

Temp: 0.86, Tokens: 119, METEOR: 0.1498

Temp: 0.86, Tokens: 100, METEOR: 0.1600

Temp: 1.00, Tokens: 126, METEOR: 0.2139

Temp: 0.77, Tokens: 116, METEOR: 0.2001

Temp: 1.00, Tokens: 100, METEOR: 0.1046

Temp: 0.80, Tokens: 104, METEOR: 0.1857

Temp: 0.97, Tokens: 101, METEOR: 0.1288

Temp: 0.96, Tokens: 121, METEOR: 0.1345

Temp: 0.87, Tokens: 111, METEOR: 0.1623

Temp: 1.00, Tokens: 100, METEOR: 0.1287

Temp: 0.90, Tokens: 104, METEOR: 0.1597

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 108

METEOR Score: 0.1280

Generated Text:

Winter enthusiasts have found their dream cookware just in time for snowy season. John Lewis has introduced an "utterly delightful tea set" to their winter collection, and home decor aficionados are loving the vibrant set saying, "Let it snow" for some cozy indoors tea parties. These resilient mugs sport an intricate winter-themed design and are big enough for a generous cup of hot cocoa or tea. The set includes four ceramic mugs, perfect for indoor use yet sturdy enough for outdoor winter gatherings. John Lewis's winter warmer set is £

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Shoppers anxiously awaiting summer weather good enough for al fresco dining say they have found their perfect tableware ahead of BBQ season. Marks and Spencer has added a set of 4 "gorgeous picnic plates" to their range of summer homeware, and decor fans obsessed with the colourful collection say "bring on summer" for some outdoor dining. The durable dinner plates have a statement boho-inspired design and, at nearly 28 cm wide, are a practical option for any meal. The set of 4 plates is made from melamine, so they're sturdy enough to be used outdoors, but the patterns are stylish enough that you may want to use them for dinners every day. M&S's colourful crockery is €20 online here. The retailer also has other picnic bits in the boho style too, and sells a popular set of side plates for €16 and a set of pasta bowls for €20 if you want to complete the collection. Plenty of homeware retailers are selling some super summer tableware perfect for outdoor dining. Over at Next, this Set of 4 Tapas Plates feature two cute designs and are the "perfect size for party nibbles."

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-sixth test with the summer tableware sample, both approaches successfully transformed the product announcement while maintaining the retail style and customer reaction elements. The manual approach (METEOR: 0.2410) reimagined the scenario as an Urban Outfitters "blanket-tote combo" for outdoor concerts priced at $35, effectively shifting from dinnerware to festival accessories while preserving key elements like the enthusiastic customer quotes and product specifications. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 108, METEOR: 0.1280) achieved better originality with a John Lewis winter-themed tea set, making a more significant contextual shift from summer BBQs to winter gatherings and from outdoor plates to indoor mugs.

47)

SAMPLE:

Dublin’s Hugh Lane Gallery boasts works by luminaries such as Monet, Renoir and Degas, as well as being the permanent home of Francis Bacon’s Studio. But it is also known for its exhibitions of modern and contemporary art by Irish and international artists. Between now and September, visitors to the gallery are invited to explore a brand-new series of works by Cork-based artist Ailbhe Ní Bhriain, entitled The Dream Pool Intervals. A visual artist renowned for her work with film, computer generated imagery, collage, tapestry, print and installation, as well as regular collaborations with musicians and composers, Ní Bhriain produced this current collection exclusively for Hugh Lane Gallery. The Dream Pool Intervals is described by Ní Bhriain as “a meditation on the spectre of loss that haunts the contemporary imagination”, and deals with major issues humanity faces today, such as war and climate change. Acting as the centrepiece of the exhibition are five large, intricately woven, jacquard tapestries, which merge segments of archival portraiture from colonial and early industrial periods with imagery of nature and the built environment.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1957

Generated New Text:

New York's Guggenheim Museum hosts works by legends like Picasso, van Gogh, and Kandinsky, as well as being the permanent home to Richard Serra's torqued sculptures. It carries a vibrant reputation for its presentations of innovative contemporary pieces by national and international artists. From now until December, visitors are welcomed to experience a new selection of artworks by Los Angeles artist Allison Mora, titled The Echoing Spaces. A digital artist known for her mastery of virtual reality, 3D animation, sculpture, and sound installation, with frequent collaborations with tech companies, Mora developed this unique collection specifically for the Guggenheim Museum. The Echoing Spaces is defined by Mora as "a contemplation on the shadow of transience

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Dublin's Hugh Lane Gallery boasts works by luminaries such as Monet, Renoir and Degas, as well as being the permanent home of Francis Bacon's Studio. But it is also known for its exhibitions of modern and contemporary art by Irish and international artists. Between now and September, visitors to the gallery are invited to explore a brand-new series of works by Cork-based artist Ailbhe Ní Bhriain, entitled The Dream Pool Intervals. A visual artist renowned for her work with film, computer generated imagery, collage, tapestry, print and installation, as well as regular collaborations with musicians and composers, Ní Bhriain produced this current collection exclusively for Hugh Lane Gallery. The Dream Pool Intervals is described by Ní Bhriain as "a meditation on the spectre of loss that haunts the contemporary imagination", and deals with major issues humanity faces today, such as war and climate change. Acting as the centrepiece of the exhibition are five large, intricately woven, jacquard tapestries, which merge segments of archival portraiture from colonial and early industrial periods with imagery of nature and the built environment.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.81, Tokens: 118, METEOR: 0.1349

Temp: 0.78, Tokens: 148, METEOR: 0.1962

Temp: 0.71, Tokens: 122, METEOR: 0.1525

Temp: 0.84, Tokens: 124, METEOR: 0.1005

Temp: 0.96, Tokens: 105, METEOR: 0.1147

Temp: 0.85, Tokens: 105, METEOR: 0.1273

Temp: 0.70, Tokens: 150, METEOR: 0.1767

Temp: 0.70, Tokens: 122, METEOR: 0.1294

Temp: 0.73, Tokens: 121, METEOR: 0.1267

Temp: 1.00, Tokens: 100, METEOR: 0.1684

Temp: 0.86, Tokens: 108, METEOR: 0.1187

Temp: 0.70, Tokens: 142, METEOR: 0.1780

Temp: 0.71, Tokens: 122, METEOR: 0.1683

Temp: 0.70, Tokens: 121, METEOR: 0.1759

Temp: 0.95, Tokens: 102, METEOR: 0.0777

Temp: 0.91, Tokens: 106, METEOR: 0.1126

Temp: 0.75, Tokens: 125, METEOR: 0.1798

Temp: 0.77, Tokens: 113, METEOR: 0.1183

Temp: 0.74, Tokens: 114, METEOR: 0.1118

Temp: 0.93, Tokens: 103, METEOR: 0.0715

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9275

Max Tokens: 103

METEOR Score: 0.1182

Generated Text:

London's Belgravia Gallery showcases masterpieces from giants like Van Gogh, Picasso, and Rembrandt, while also serving as the permanent residence of Da Vinci's Workshop. It is recognized for its presentations of classical and avant-garde art by English and global creatives. Until December, gallery attendees are invited to immerse themselves in a brand-new array of creations by Yorkshire-based artist Celia Hart, undeniably titled The Time Chronicles. A multidisciplinary artist known for her engagement with sculpture, virtual

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Dublin's Hugh Lane Gallery boasts works by luminaries such as Monet, Renoir and Degas, as well as being the permanent home of Francis Bacon's Studio. But it is also known for its exhibitions of modern and contemporary art by Irish and international artists. Between now and September, visitors to the gallery are invited to explore a brand-new series of works by Cork-based artist Ailbhe Ní Bhriain, entitled The Dream Pool Intervals. A visual artist renowned for her work with film, computer generated imagery, collage, tapestry, print and installation, as well as regular collaborations with musicians and composers, Ní Bhriain produced this current collection exclusively for Hugh Lane Gallery. The Dream Pool Intervals is described by Ní Bhriain as "a meditation on the spectre of loss that haunts the contemporary imagination", and deals with major issues humanity faces today, such as war and climate change. Acting as the centrepiece of the exhibition are five large, intricately woven, jacquard tapestries, which merge segments of archival portraiture from colonial and early industrial periods with imagery of nature and the built environment.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-seventh test with the Hugh Lane Gallery exhibition, both approaches successfully transformed the art gallery announcement while maintaining the formal tone and exhibition details. The manual approach (METEOR: 0.1957) reimagined the scenario as the Guggenheim Museum in New York featuring digital artist Allison Mora's "The Echoing Spaces" exhibition, effectively shifting from Irish tapestry art to American digital installations while preserving key elements like the exhibition time frame and artistic themes. The PSO-optimized version (Temperature: 0.9275, Max Tokens: 103, METEOR: 0.1182) achieved better originality with London's Belgravia Gallery showcasing Yorkshire artist Celia Hart's "The Time Chronicles" exhibition, though it was cut off mid-description due to token limitations.

48)

SAMPLE:

After months of design and refurbishment, the new bar in Cork's Imperial Hotel is officially open and ready to serve up some of the best cocktails on Leeside. Fitzgerald's Bar opened last night, with the Lord Mayor of Cork, local business leaders and members of Cork Sporting community enjoying live music from Eurovision winner Paul Harrington. And it was a stylish way for the hotel owners, the Louis Fitzgerald Family to toast the new look venue, a year into their first business venture in Cork. The extensive refurbishment has transformed the bar on the ground floor of the 200-year-old hotel, but the high ceilings and crystal chandeliers remain. There's now a grand piano at centre stage in the bar and the previously tiered flooring has been levelled, making the space more open and accessible. Inside, it's all gold leaf, rich velvet furnishings and bespoke mosaic tiling, with a large, L-shaped wraparound bar. As well as cocktails, there will be an extensive menu of small bites which will fully launch from the start of summer.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1220

Generated New Text:

Following a series of detailed reconstructions, Livingston's favorite bookstore, 'The Book Nook', has finally unlocked its doors again, promising an exquisite array of literary masterpieces. The ribbon-cutting ceremony took place yesterday during a lively event that welcomed the Town Mayor, local entrepreneurs, and a notable crowd of Livingston’s literary enthusiasts, all captivated by a reading from Pulitzer-winning author Alice Walker. The project – a proud feather in the cap of the owners, the acclaimed Byron family – successfully preserved the charm of this 18th-century property, maintaining the tall bookcases and classic wooden ladders. A reading nook now occupies the previously cluttered corner, offering a more fluid access to the considerable space. Distinctive leather armchairs,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

After months of design and refurbishment, the new bar in Cork's Imperial Hotel is officially open and ready to serve up some of the best cocktails on Leeside. Fitzgerald's Bar opened last night, with the Lord Mayor of Cork, local business leaders and members of Cork Sporting community enjoying live music from Eurovision winner Paul Harrington. And it was a stylish way for the hotel owners, the Louis Fitzgerald Family to toast the new look venue, a year into their first business venture in Cork. The extensive refurbishment has transformed the bar on the ground floor of the 200-year-old hotel, but the high ceilings and crystal chandeliers remain. There's now a grand piano at centre stage in the bar and the previously tiered flooring has been levelled, making the space more open and accessible. Inside, it's all gold leaf, rich velvet furnishings and bespoke mosaic tiling, with a large, L-shaped wraparound bar. As well as cocktails, there will be an extensive menu of small bites which will fully launch from the start of summer.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.91, Tokens: 124, METEOR: 0.1439

Temp: 0.75, Tokens: 133, METEOR: 0.1585

Temp: 0.82, Tokens: 121, METEOR: 0.1533

Temp: 0.70, Tokens: 136, METEOR: 0.2398

Temp: 0.88, Tokens: 117, METEOR: 0.1967

Temp: 0.99, Tokens: 143, METEOR: 0.1975

Temp: 0.78, Tokens: 120, METEOR: 0.2562

Temp: 0.94, Tokens: 122, METEOR: 0.1470

Temp: 0.70, Tokens: 118, METEOR: 0.2439

Temp: 0.86, Tokens: 105, METEOR: 0.1494

Temp: 0.98, Tokens: 144, METEOR: 0.1371

Temp: 0.88, Tokens: 124, METEOR: 0.1350

Temp: 0.98, Tokens: 123, METEOR: 0.1662

Temp: 0.73, Tokens: 117, METEOR: 0.2499

Temp: 0.86, Tokens: 101, METEOR: 0.1530

Temp: 0.94, Tokens: 144, METEOR: 0.1315

Temp: 0.93, Tokens: 136, METEOR: 0.2125

Temp: 0.98, Tokens: 133, METEOR: 0.1314

Temp: 0.80, Tokens: 129, METEOR: 0.1315

Temp: 0.90, Tokens: 112, METEOR: 0.1240

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9041

Max Tokens: 112

METEOR Score: 0.1208

Generated Text:

Following a lengthy construction and planning period, Cityscape Café in the heart of Melbourne is all set to strike the right chords with its sumptuous coffee brews. The grand café, envisioned by the renowned Adelaide Richards Family, was inaugurated last week with the Mayor of Melbourne, esteemed business magnates, and famous sports figures marking their presence. The interior of the historic, 180-year-old building has been revamped completely while preserving its original high arches and elegant candelabras. Keeping up with the modern vibe, an acoustic stage has now been set up

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

After months of design and refurbishment, the new bar in Cork's Imperial Hotel is officially open and ready to serve up some of the best cocktails on Leeside. Fitzgerald's Bar opened last night, with the Lord Mayor of Cork, local business leaders and members of Cork Sporting community enjoying live music from Eurovision winner Paul Harrington. And it was a stylish way for the hotel owners, the Louis Fitzgerald Family to toast the new look venue, a year into their first business venture in Cork. The extensive refurbishment has transformed the bar on the ground floor of the 200-year-old hotel, but the high ceilings and crystal chandeliers remain. There's now a grand piano at centre stage in the bar and the previously tiered flooring has been levelled, making the space more open and accessible. Inside, it's all gold leaf, rich velvet furnishings and bespoke mosaic tiling, with a large, L-shaped wraparound bar. As well as cocktails, there will be an extensive menu of small bites which will fully launch from the start of summer.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-eighth test with the Imperial Hotel bar opening, both approaches successfully transformed the venue opening announcement while maintaining the event style and renovation details. The manual approach (METEOR: 0.1220) reimagined the scenario as "The Book Nook" bookstore reopening in Livingston with the Byron family as owners and Pulitzer-winner Alice Walker as special guest, effectively shifting from an upscale bar to a literary venue while preserving key elements like the preservation of historic features and interior redesign. The PSO-optimized version (Temperature: 0.9041, Max Tokens: 112, METEOR: 0.1208) achieved similar originality with Melbourne's Cityscape Café opening by the Adelaide Richards Family, transforming a historic building into a coffee destination with preserved architectural elements, though it was cut off before completion due to token limitations.

49)

SAMPLE:

Nothing tastes better than delicious discounts on your favourite dishes, and now you can treat your tastebuds for just a fraction of the price. We’ve teamed up with subscription-based dining club tastecard to give you 90 days of unlimited offers at restaurants in the UK and Ireland, as well as cinemas and attractions. As part of your free trial, you can enjoy 2 for 1 meals or 25 percent off the total bill at thousands of restaurants, including Frankie & Benny’s and Chiquito. So, if you’re craving a mouthwatering Italian meal, there’s no better way to spoil yourself for less at top chains including PizzaExpress, Prezzo, and Zizzi’s. With this deal, you can also get 50 percent off pizza delivery from hundreds of locations, such as Pizza Hut, Papa John’s, and Domino’s. Burger enthusiasts can also indulge at fan-favourite outlets, including Gourmet Burger Kitchen (GBK), Burger King, and Ed's Easy Diner.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1714

Generated New Text:

Indulge in the sweetest savings on the books you love most, as we've partnered with BookBox, an exclusive members-only platform offering massive discounts on a wide range of genres. Dive into a fantasy realm or travel back in time with historical novels, all at a fraction of the cost. For a limited time, you have access to 90 days of incredible offers on books from top publishers in the US and UK. As part of this tantalizing trial, enjoy up to 50% off on best sellers, and even those hard-to-find classic novels. From the thrilling work of Stephen King to the poignant prose of Jane Austen, there's something for everyone. What’s more, get exciting offers on e-books from the likes of

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

Nothing tastes better than delicious discounts on your favourite dishes, and now you can treat your tastebuds for just a fraction of the price. We've teamed up with subscription-based dining club tastecard to give you 90 days of unlimited offers at restaurants in the UK and Ireland, as well as cinemas and attractions. As part of your free trial, you can enjoy 2 for 1 meals or 25 percent off the total bill at thousands of restaurants, including Frankie & Benny's and Chiquito. So, if you're craving a mouthwatering Italian meal, there's no better way to spoil yourself for less at top chains including PizzaExpress, Prezzo, and Zizzi's. With this deal, you can also get 50 percent off pizza delivery from hundreds of locations, such as Pizza Hut, Papa John's, and Domino's. Burger enthusiasts can also indulge at fan-favourite outlets, including Gourmet Burger Kitchen (GBK), Burger King, and Ed's Easy Diner.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.79, Tokens: 138, METEOR: 0.2943

Temp: 0.93, Tokens: 142, METEOR: 0.2719

Temp: 0.96, Tokens: 124, METEOR: 0.2040

Temp: 0.78, Tokens: 120, METEOR: 0.3416

Temp: 0.81, Tokens: 109, METEOR: 0.2138

Temp: 0.72, Tokens: 139, METEOR: 0.2941

Temp: 0.84, Tokens: 145, METEOR: 0.2583

Temp: 0.91, Tokens: 145, METEOR: 0.2898

Temp: 0.93, Tokens: 143, METEOR: 0.1492

Temp: 0.86, Tokens: 132, METEOR: 0.1988

Temp: 0.75, Tokens: 141, METEOR: 0.2574

Temp: 0.84, Tokens: 146, METEOR: 0.2313

Temp: 0.89, Tokens: 150, METEOR: 0.1825

Temp: 1.00, Tokens: 150, METEOR: 0.2564

Temp: 0.88, Tokens: 144, METEOR: 0.3579

Temp: 0.83, Tokens: 143, METEOR: 0.1690

Temp: 0.85, Tokens: 146, METEOR: 0.2083

Temp: 0.89, Tokens: 150, METEOR: 0.2341

Temp: 1.00, Tokens: 150, METEOR: 0.2465

Temp: 0.90, Tokens: 149, METEOR: 0.1936

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 0.9271

Max Tokens: 143

METEOR Score: 0.2607

Generated Text:

Get ready to soak up savings while achieving a flawless summer glow, courtesy of our collaboration with the subscription-based beauty box, GlamBox. For the next three months, indulge in limitless offers on premium skincare products, cosmetics, and wellness essentials across the USA and Canada. With your free trial, you can pamper yourself with a 'buy one, get one free' deal or 25 percent off your total purchase at countless beauty brands, including Sephora and Body Shop. Transform your daily beauty routine with significant discounts at popular chains like MAC, Clinique, and L'Oréal. And yes, we also offer 50 percent off home delivery from a multitude of beauty outlets, including Ulta, Bath & Body

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

Nothing tastes better than delicious discounts on your favourite dishes, and now you can treat your tastebuds for just a fraction of the price. We've teamed up with subscription-based dining club tastecard to give you 90 days of unlimited offers at restaurants in the UK and Ireland, as well as cinemas and attractions. As part of your free trial, you can enjoy 2 for 1 meals or 25 percent off the total bill at thousands of restaurants, including Frankie & Benny's and Chiquito. So, if you're craving a mouthwatering Italian meal, there's no better way to spoil yourself for less at top chains including PizzaExpress, Prezzo, and Zizzi's. With this deal, you can also get 50 percent off pizza delivery from hundreds of locations, such as Pizza Hut, Papa John's, and Domino's. Burger enthusiasts can also indulge at fan-favourite outlets, including Gourmet Burger Kitchen (GBK), Burger King, and Ed's Easy Diner.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the forty-ninth test with the restaurant discount offer, both approaches successfully transformed the promotional announcement while maintaining the discount structure and excitement. The manual approach (METEOR: 0.1714) reimagined the scenario as a BookBox subscription offering 90-day discounts on books from top publishers with up to 50% off bestsellers, effectively shifting from food to literature while preserving key elements like the trial period and specific discount percentages. The PSO-optimized version (Temperature: 0.9271, Max Tokens: 143, METEOR: 0.2607) created a GlamBox beauty subscription with three months of skincare and cosmetics discounts in the USA and Canada, though it had a higher METEOR score indicating somewhat less originality than the manual version, despite using higher temperature settings.

50)

SAMPLE:

An East Cork café brand is opening its second location, taking over the former Perry Street Café in the city centre. It's a big expansion into Cork city for Carrigtwohill-based Bakestone, which will be opening on Perry Street soon. Café manager Neil Muscheidt has been working with Bakestone for 10 years and told CorkBeo he is "delighted" to see the brand growing. Neil will be overseeing both cafés and said he "can't wait" for the challenge. "We had been looking at a few different premises over the years," he said, "And then this came up, and it was just perfect." The Bakestone café in Carrigtwohill is a very popular spot and is well-known for its commitment to local produce, with plenty of Cork-owned brands on the menu. The new Perry Street café will be offering much of the same, with a brunch and lunch menu, lots of sweet treats and good quality coffee from Fermoy-based Badger and Dodo. “There have been a lot of new and exciting eateries open in the city in recent years, and we think we’ll fit right in," said Neil, "Currently, there is a lot of work happening on site, and we’re super excited to open our doors and share this space, steeped in the rich history of the Irish butter trade, with everyone very soon." The Perry Street location will also have a retail section with lots of Irish artisan products.

MANUALLY (WITHOUT PSO):

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

METEOR Score: 0.1378

Generated New Text:

The Portland-based brewery, Green Dragon, is expanding its roots with a new pub opening in the heart of Oldtown on Ash Street. This is a significant leap for the suburban beer maker which will soon start pouring out exquisite ales in the hustle and bustle of the city. Pub manager, Ken Ruppert, who has dedicated over a decade to shaping the identity of Green Dragon, revealed his elation over this new chapter for the brand. Always on his toes, Ken is ready to undertake the helm of both pubs. "We've been contemplating various locations for years, but this opportunity fits our brand like a glove," he expressed. The original Green Dragon in Portland is a local hot spot lauded for its high-quality local brews,

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

from openai import OpenAI

# Ensure necessary NLTK resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Your original text to learn from

original\_text = """

An East Cork café brand is opening its second location, taking over the former Perry Street Café in the city centre. It's a big expansion into Cork city for Carrigtwohill-based Bakestone, which will be opening on Perry Street soon. Café manager Neil Muscheidt has been working with Bakestone for 10 years and told CorkBeo he is "delighted" to see the brand growing. Neil will be overseeing both cafés and said he "can't wait" for the challenge. "We had been looking at a few different premises over the years," he said, "And then this came up, and it was just perfect." The Bakestone café in Carrigtwohill is a very popular spot and is well-known for its commitment to local produce, with plenty of Cork-owned brands on the menu. The new Perry Street café will be offering much of the same, with a brunch and lunch menu, lots of sweet treats and good quality coffee from Fermoy-based Badger and Dodo. "There have been a lot of new and exciting eateries open in the city in recent years, and we think we'll fit right in," said Neil, "Currently, there is a lot of work happening on site, and we're super excited to open our doors and share this space, steeped in the rich history of the Irish butter trade, with everyone very soon." The Perry Street location will also have a retail section with lots of Irish artisan products.

"""

# Function to generate creative new text inspired by the original

def generate\_gpt4\_inspired\_text(original\_text, min\_words=80, max\_words=100):

    # Using the new ChatCompletion API format with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4 as requested

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete. The output should be approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=150,  # Limiting to control costs

        n=1,

        temperature=1.0,  # Maximum creativity

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Generate inspired text

generated\_text = generate\_gpt4\_inspired\_text(original\_text)

# Compute METEOR score (comparing original and generated text)

reference = [original\_text.split()]

hypothesis = generated\_text.split()

meteor\_score\_value = meteor\_score(reference, hypothesis)

# Print results

print(f"METEOR Score: {meteor\_score\_value:.4f}")

print("\nGenerated New Text:")

print(generated\_text)

OPTIMIZED:

[nltk\_data] Downloading package wordnet to /root/nltk\_data...

[nltk\_data] Package wordnet is already up-to-date!

[nltk\_data] Downloading package punkt to /root/nltk\_data...

[nltk\_data] Package punkt is already up-to-date!

Starting PSO optimization...

Temp: 0.92, Tokens: 116, METEOR: 0.1038

Temp: 0.86, Tokens: 115, METEOR: 0.1557

Temp: 0.85, Tokens: 137, METEOR: 0.1254

Temp: 0.95, Tokens: 119, METEOR: 0.0971

Temp: 0.78, Tokens: 107, METEOR: 0.1041

Temp: 1.00, Tokens: 107, METEOR: 0.0953

Temp: 0.77, Tokens: 112, METEOR: 0.1501

Temp: 1.00, Tokens: 116, METEOR: 0.0880

Temp: 1.00, Tokens: 119, METEOR: 0.0903

Temp: 0.85, Tokens: 124, METEOR: 0.1123

Temp: 1.00, Tokens: 106, METEOR: 0.0994

Temp: 0.79, Tokens: 111, METEOR: 0.1172

Temp: 1.00, Tokens: 105, METEOR: 0.0881

Temp: 1.00, Tokens: 118, METEOR: 0.1218

Temp: 0.88, Tokens: 122, METEOR: 0.1138

Temp: 1.00, Tokens: 109, METEOR: 0.1230

Temp: 0.84, Tokens: 112, METEOR: 0.0882

Temp: 1.00, Tokens: 106, METEOR: 0.1176

Temp: 1.00, Tokens: 117, METEOR: 0.1034

Temp: 0.87, Tokens: 113, METEOR: 0.1035

Stopping search: maximum iterations reached --> 3

Generating final text with optimized parameters...

Optimized Parameters:

Temperature: 1.0000

Max Tokens: 116

METEOR Score: 0.1183

Generated Text:

A Central Dublin bakery chain is gearing up to launch its third branch, taking over the former O'Connell Street Bakery in the city centre. This is a major leap for Blackrock-based Bread & Butter, which will soon unfurl its operations on O'Connell Street. Bakery manager Fiona O'Reilly, associated with Bread & Butter for 15 years, expressed her excitement to IrishNews about the expansion of the brand. Fiona will direct both the bakeries and eagerly anticipates the challenge. "We'd considered numerous premises over the years," she remarked, "But this one seemed

THE CODE:

import os

import nltk

from nltk.translate.meteor\_score import meteor\_score

import numpy as np

from pyswarm import pso

from openai import OpenAI

# Ensure necessary resources are downloaded

nltk.download('wordnet')

nltk.download('punkt')

# Initialize the OpenAI client with your API key

client = OpenAI(api\_key=os.getenv("OPENAI\_API\_KEY"))

# Original text

original\_text = """

An East Cork café brand is opening its second location, taking over the former Perry Street Café in the city centre. It's a big expansion into Cork city for Carrigtwohill-based Bakestone, which will be opening on Perry Street soon. Café manager Neil Muscheidt has been working with Bakestone for 10 years and told CorkBeo he is "delighted" to see the brand growing. Neil will be overseeing both cafés and said he "can't wait" for the challenge. "We had been looking at a few different premises over the years," he said, "And then this came up, and it was just perfect." The Bakestone café in Carrigtwohill is a very popular spot and is well-known for its commitment to local produce, with plenty of Cork-owned brands on the menu. The new Perry Street café will be offering much of the same, with a brunch and lunch menu, lots of sweet treats and good quality coffee from Fermoy-based Badger and Dodo. "There have been a lot of new and exciting eateries open in the city in recent years, and we think we'll fit right in," said Neil, "Currently, there is a lot of work happening on site, and we're super excited to open our doors and share this space, steeped in the rich history of the Irish butter trade, with everyone very soon." The Perry Street location will also have a retail section with lots of Irish artisan products.

"""

# Function to generate creative new text inspired by the original using GPT-4

def generate\_gpt4\_text(original\_text, temperature=1.0, max\_tokens=150):

    # Using the ChatCompletion API with GPT-4

    response = client.chat.completions.create(

        model="gpt-4",  # Using GPT-4

        messages=[

            {"role": "system", "content": "You are a creative writer who generates new content inspired by source material. Analyze the style, tone, and topic of the provided text, then create something completely new that maintains the same style and theme but tells a different story or presents different information. Don't paraphrase - create something original while maintaining the essence of the source. Make sure all sentences are complete and the response is approximately 80-100 words total."},

            {"role": "user", "content": original\_text}

        ],

        max\_tokens=max\_tokens,

        n=1,

        temperature=temperature,

    )

    # Extract the generated text from the response

    generated\_text = response.choices[0].message.content.strip()

    return generated\_text

# Objective function for PSO (minimizing METEOR score)

def objective\_function(params):

    temperature, max\_tokens = params

    try:

        # Ensure max\_tokens stays within 100-150 range

        tokens = min(max(100, int(max\_tokens)), 150)

        generated\_text = generate\_gpt4\_text(

            original\_text,

            temperature=temperature,

            max\_tokens=tokens

        )

        # Compute METEOR score (comparing original and generated text)

        reference = [original\_text.split()]

        hypothesis = generated\_text.split()

        score = meteor\_score(reference, hypothesis)

        # Print intermediate results for monitoring

        print(f"Temp: {temperature:.2f}, Tokens: {tokens}, METEOR: {score:.4f}")

        return score  # Minimize METEOR score

    except Exception as e:

        print(f"Error: {e}")

        return 1.0  # Return a high score on error

# Define PSO parameters with strict token limits

lb = [0.7, 100]    # Lower bounds [temperature, max\_tokens]

ub = [1.0, 150]    # Upper bounds [temperature, max\_tokens] - strict upper limit

swarmsize = 5      # Keep original swarm size for better optimization

maxiter = 3        # Keep original iterations for better optimization

# Run PSO optimization

print("Starting PSO optimization...")

best\_params, best\_score = pso(objective\_function, lb, ub, swarmsize=swarmsize, maxiter=maxiter)

best\_temperature, best\_max\_tokens = best\_params

# Ensure final tokens are within limits

final\_max\_tokens = min(max(100, int(best\_max\_tokens)), 150)

# Generate final text with optimized parameters

print("\nGenerating final text with optimized parameters...")

final\_text = generate\_gpt4\_text(

    original\_text,

    temperature=best\_temperature,

    max\_tokens=final\_max\_tokens

)

# Compute final METEOR score

reference = [original\_text.split()]

hypothesis = final\_text.split()

final\_score = meteor\_score(reference, hypothesis)

# Print results

print(f"\nOptimized Parameters:")

print(f"Temperature: {best\_temperature:.4f}")

print(f"Max Tokens: {final\_max\_tokens}")

print(f"METEOR Score: {final\_score:.4f}")

print("\nGenerated Text:\n")

print(final\_text)

THE ANALYSIS:

In the fiftieth test with the Bakestone café expansion, both approaches successfully transformed the business expansion announcement while maintaining the local connection and manager quotes. The manual approach (METEOR: 0.1378) reimagined the scenario as the Green Dragon brewery opening a second location in Portland's Oldtown district with manager Ken Ruppert overseeing both locations, effectively shifting from an Irish café to an American brewery while preserving key elements like the decade-long manager experience and excitement about the perfect location. The PSO-optimized version (Temperature: 1.0000, Max Tokens: 116, METEOR: 0.1183) achieved better originality with Dublin's Bread & Butter bakery opening its third location on O'Connell Street with manager Fiona O'Reilly's 15 years of experience, though it was cut off mid-description due to token limitations.