

ASSIGNMENT - 3

LAB - 1

1. Exploring the ChatGPT Interface

ChatGPT, developed by OpenAI, provides a clean and interactive interface for users to communicate with an advanced AI model. The interface includes a chat box, response area, sidebar for saved chats, and options to upload files or choose different AI models. I experimented with various prompts, such as questions, commands, and code requests. It allows for structured outputs (tables, JSON), context-aware answers, and tone modifications. The simplicity and responsiveness of the interface make it accessible for tasks ranging from casual conversations to technical problem-solving.

2. Studying Transformer Architecture

The core technology behind ChatGPT is the transformer architecture, introduced by Vaswani et al. It utilizes a mechanism called self-attention, which helps the model understand relationships between words in a sentence, regardless of order. I studied this using visual tools such as The Illustrated Transformer and Hugging Face's attention viewer. Concepts like multi-head attention, positional encoding, and encoder-decoder blocks were clearly demonstrated. These visuals helped me understand how ChatGPT processes and generates human-like text with high accuracy and context awareness.

3. Real-World Applications of ChatGPT

ChatGPT has powerful applications across various sectors:

- Education: Generating quizzes, summarizing notes, explaining complex concepts in simple terms.

- Healthcare: Simulating a medical assistant chatbot, summarizing patient records or articles.

- Business: Writing professional emails, generating business reports, drafting marketing content.

- Creativity: Writing poetry, stories, social media captions, and brainstorming content ideas.

LAB – 2

1. Instructional Prompts

Write a short poem about a rainy day.

Rainy Day

Raindrops tapping on the glass,
Clouds drift slowly as they pass.
Puddles form where children play,
Washing all the dust away.

Gray above, but calm below,
In the rain, the world moves slow.
A quiet peace, a soft refrain—
There's magic in a gentle rain.

Translate this sentence into French: I love learning.

The French translation of "I love learning" is:
J'aime apprendre.

Solve 3 + 5

3 + 5 = 8 ✓

Generate a Python program to check whether given number is even or odd

Sure! Here's a simple Python program to check whether a given number is even or odd:

```
python Copy Edit

# Program to check if a number is even or odd

# Get input from the user
number = int(input("Enter a number: "))

# Check if the number is even or odd
if number % 2 == 0:
    print(f"{number} is even.")
else:
    print(f"{number} is odd.")
```

2. Interrogative Prompts

What is the capital of USA?

The capital of the USA is **Washington, D.C.**

who discovered gravity

Isaac Newton

Why do we see different phases of the moon?

We see different phases of the Moon because of its **orbit around the Earth** and the way **sunlight shines on it**.

When was the first computer invented?

The first computer was invented in the **1940s**.

Who is the president of India?

The **President of India** is **Smt. Droupadi (Draupadi) Murmu**, who has been serving since **25 July 2022** as the 15th President of India [Wikipedia](#) ⁺¹⁰.

3. Zero-shot Prompts

Write a motivational quote.

"Believe in yourself. Every great journey begins with a single step fueled by courage." 🌟

List three benefits of meditation.

Here are three key benefits of meditation:

1. **Reduces Stress** – Meditation helps calm the mind and lowers cortisol levels, reducing anxiety and tension.
2. **Improves Focus** – Regular practice enhances attention span and concentration.
3. **Boosts Emotional Health** – It promotes self-awareness, emotional balance, and a more positive outlook on life.

Summarize this sentence: The cat sat on the mat.

A cat was sitting on a mat.

Convert this to passive voice: The teacher explained the topic.

The topic was explained by the teacher.

4. Few-shot Prompts

Example: Translate 'Hello' to French → Bonjour. Now translate 'Goodbye'.

Translate 'Goodbye' to French → Au revoir.

Example: Summarize: 'Birds can fly.' → 'Birds fly.' Now summarize: 'The sun shines brightly.'

The sun shines.

Example: Convert to past tense: 'He walks.' → 'He walked.' Now: 'She dances.'

She danced.

Example: Turn into question: 'You are ready.' → 'Are you ready?' Now: 'She is coming.'"

Is she coming?

Example: Change tone from informal to formal: 'Hey, what's up?' → 'Good afternoon, how may I help you?' Now: 'Wanna hang out later?'

Would you like to spend some time together later?

LAB - 3

Prompt:
Extract the following details from this paragraph and present them in a table:
"Rahul Verma has 5 years of experience as a Data Scientist. He worked at Infosys from 2020 to 2023. He has skills in Python, Machine Learning, and SQL."

Output (Table):

Name	Experience	Role	Company	Years	Skills
Rahul Verma	5 years	Data Scientist	Infosys	2020 – 2023	Python, Machine Learning, SQL

LAB - 4

Activity 1: Summarize News / Research

Original Paragraph (News Example):

"The Indian Space Research Organisation (ISRO) successfully launched the Aditya-L1 mission on September 2, 2023. This is India's first solar mission aimed at studying the Sun's atmosphere, solar winds, and magnetic fields. The mission will help scientists better understand space weather and its impact on satellite communications and power grids on Earth."

Summarized Output:

- ISRO launched Aditya-L1, India's first solar mission, on Sept 2, 2023.
- Purpose: Study the Sun's atmosphere, solar winds, magnetic fields.
- Importance: Helps in understanding space weather and protecting Earth's satellites & power systems.

Activity 2: Rewrite Emails in Different Tones

Original Email (Informal):

"Hey, I just wanted to remind you about the project deadline tomorrow. Please send me your part by tonight so I can compile everything. Thanks!"

■ Formal Tone:

*"Dear Team Member,
This is a kind reminder regarding our project submission deadline scheduled for tomorrow. I kindly request you to share your portion of the work by tonight, so I can compile the final document. Thank you for your cooperation."*

■ Informal Tone (more casual):

"Hi, just a quick reminder — the project deadline is tomorrow. Please send your part tonight so I can put it all together. Thanks a lot!"

LAB - 5

Prompt:

Write a Python program to check if a number is prime.

```
def is_prime(num):  
    if num <= 1:  
        return False  
    for i in range(2, int(num**0.5) + 1):  
        if num % i == 0:  
            return False  
    return True  
  
n = int(input("Enter a number: "))  
if is_prime(n):  
    print(f"{n} is a prime number.")  
else:  
    print(f"{n} is not a prime number.")
```

Expected Output :

```
Enter a number: 7  
7 is a prime number.
```


LAB - 6

Prompt :

Generate a 5-question multiple-choice quiz on Artificial Intelligence for second-year engineering students. Each question should have 4 options and the correct answer clearly indicated.

ChatGPT Output (Quiz):

Q1. Which of the following is an example of a supervised learning algorithm?

- a) K-Means Clustering
- b) Linear Regression
- c) Apriori Algorithm
- d) DBSCAN

Answer: b) Linear Regression

Q2. What does NLP stand for in Artificial Intelligence?

- a) Natural Logic Processing
- b) Neural Language Programming
- c) Natural Language Processing
- d) Non-Linear Prediction

Answer: c) Natural Language Processing

Q3. Which component is considered the “brain” of an expert system?

- a) Inference Engine
- b) User Interface
- c) Database
- d) Knowledge Acquisition Module

Answer: a) Inference Engine

Q4. What type of agent uses sensors and actuators to interact with the environment?

- a) Software Agent
- b) Reflex Agent
- c) Rational Agent
- d) Physical Agent

Answer: d) Physical Agent

Q5. Which search algorithm guarantees finding the shortest path?

- a) Depth-First Search
- b) Breadth-First Search
- c) Random Search

d) Hill Climbing

Answer: b) Breadth-First Search