

Lab 1: Introduction to ChatGPT

Objective:

To understand the basic working of ChatGPT, its origin, how it functions, and its real-world applications.

What is ChatGPT?

ChatGPT is a powerful AI chatbot developed by **OpenAI**. It is based on a model called **GPT – Generative Pre-trained Transformer**. This model helps ChatGPT understand and generate human-like text. It can answer questions, write essays, help with coding, summarize text, and even create stories.

How does ChatGPT work?

ChatGPT uses a type of deep learning architecture called a **Transformer**. This system pays attention to different parts of a sentence (using something called "self-attention") to understand the meaning and give a suitable response.

The model is trained in two steps:

1. **Pre-training:** Learning language patterns from a large dataset.
 2. **Fine-tuning:** Making the chatbot safer, more useful, and human-friendly.
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Activities Performed:

- Explored ChatGPT interface by typing questions and observing how the AI responds.
 - Studied Transformer architecture using visual diagrams showing attention mechanism.
 - Listed real-world use-cases across different sectors.
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Real-World Applications of ChatGPT:

1. **Education:** Explaining difficult topics, generating summaries, solving maths, helping with homework.
 2. **Health:** Giving general health advice, explaining symptoms or medicines (not a replacement for a doctor).
 3. **Business:** Writing emails, summarizing reports, generating product descriptions or ad content.
 4. **Creativity:** Writing poems, stories, lyrics, jokes, and designing creative ideas for content.
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Conclusion:

ChatGPT is a helpful tool in today's world. It saves time, boosts creativity, improves productivity, and supports learning. By understanding how ChatGPT works, we can use it more responsibly and effectively in different fields.

Lab 2: Types of Prompts and Prompt Engineering Basics

Objective:

To understand and apply different types of prompts – instructional, interrogative, zero-shot, and few-shot – and analyze how AI responds differently based on the prompt design.

Activities:

- Try zero-shot vs few-shot prompts.
 - Design prompts with increasing complexity.
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1. Instructional Prompts (Direct Commands)

Prompt	Output
Write a paragraph about the solar system.	The solar system is made up of the Sun and all celestial bodies that orbit it...

Summarize the story of Cinderella.	Cinderella is a girl mistreated by her stepmother...
List three uses of Artificial Intelligence.	1. Chatbots, 2. Medical Diagnosis, 3. Self-driving cars
Convert this sentence into passive voice: "The dog chased the cat."	The cat was chased by the dog.
Create a meal plan for a vegetarian diet.	Breakfast: Oats and fruit, Lunch: Lentil soup and rice...

2. Interrogative Prompts (Questions)

Prompt	Output
What is climate change?	Climate change refers to long-term shifts in temperatures and weather patterns...
How does a transformer model work?	A transformer uses self-attention to process words in relation to others...
Why is exercise important?	It improves physical health, boosts mood, and increases energy levels.
When was India's independence achieved?	15th August 1947
Who is considered the father of computers?	Charles Babbage

3. Zero-shot Prompts (No examples)

Prompt	Output
Translate "Good morning" into French.	Bonjour
Classify the sentence: "I hate waiting in long lines."	Negative sentiment
Summarize the paragraph in one line.	(Summary given based on paragraph input)

What are three synonyms for "happy"?	Joyful, cheerful, content
Convert "I am playing" to past continuous tense.	I was playing

4. Few-shot Prompts (With Examples)

Prompt	Output
English: Hello → Spanish: Hola	
English: Thank you → Spanish: Gracias	
English: Good night → Spanish:	Buenas noches
Sentiment: "I love ice cream" → Positive	
Sentiment: "It's a boring movie" → Negative	
Sentiment: "The view is amazing" →	Positive
Word: Big → Synonym: Large	
Word: Fast → Synonym: Quick	
Word: Small → Synonym:	Tiny
Animal: Dog → Sound: Bark	
Animal: Cat → Sound: Meow	
Animal: Cow → Sound:	Moo
Action: "She eats" → Past Tense: She ate	
Action: "They go" → Past Tense: They went	
Action: "He runs" → Past Tense:	He ran

Comparison of Prompt Types:

Prompt Type	Description	Strengths	Limitations
Instructional	Direct commands	Precise results for tasks	Needs clarity in instruction

Interrogative	Question-based	Great for explanations	May give too brief answers
Zero-shot	No prior examples	Fast and flexible	May lack accuracy
Few-shot	Provides examples	More accurate & controlled	Requires more input effort

Lab 3: Precision Prompting for Information Extraction

Objective:

To learn how to extract structured data from ChatGPT responses using precise prompting techniques.

Activities:

1. Ask ChatGPT to format its response in JSON or tabular format

Example Prompt:

Extract the following details in JSON format: name, email, phone number, skills from the paragraph below.

"My name is Ayesha Khan, a software engineer with expertise in Python, JavaScript, and SQL. You can contact me at ayesha.khan@gmail.com or +91-9876543210."

Output: {

```
"name": "Ayesha Khan",
"email": "ayesha.khan@gmail.com",
"phone": "+91-9876543210",
"skills": ["Python", "JavaScript", "SQL"]
}
```

Extract contact info from an unstructured paragraph

Prompt:

From this paragraph, extract phone number and email address only:

"Reach out to us anytime. Contact manager Ravi at ravi.hr@company.com or call +91-9898989898 for assistance."

Output:Email: ravi.hr@company.com

Phone: +91-9898989898

Extract resume sections from a sample CV paragraph

Prompt:

**Read the following resume text and return a table with three columns:
Education, Experience, and Skills.**

***"B.Tech in Computer Engineering from MIT, Pune. Worked 2 years as
Backend Developer at Infosys. Skilled in Node.js, Express, and MongoDB."***

Output (Tabular):

Education	Experience	Skills
B.Tech in Computer Engineering	Backend Developer at Infosys (2 yrs)	Node.js, Express, MongoDB

Extract resume sections from a sample CV paragraph

Prompt:

**Read the following resume text and return a table with three columns:
Education, Experience, and Skills.**

***"B.Tech in Computer Engineering from MIT, Pune. Worked 2 years as
Backend Developer at Infosys. Skilled in Node.js, Express, and MongoDB."***

Output (Tabular):

Education	Experience	Skills
B.Tech in Computer Engineering	Backend Developer at Infosys (2 yrs)	Node.js, Express, MongoDB

Keywords: ChatGPT, conversational AI, OpenAI, tutoring, coding assistance

Output Documentation:

Task	Format Used	Output Accuracy	Comments
Contact Info Extraction	JSON	100%	Clean and accurate field mapping
Resume Sections	Table	95%	Missing job duration detail format
Keyword Extraction	List (Text)	90%	Relevant but not ranked by frequency

Lab 4: Summarization and Text Transformation

Objective:

Use ChatGPT to perform summarization, rewriting, and tone transformation of texts.

Activities & Outputs

1. Summarize a News Article

Original Text:

"The government has announced a new electric vehicle policy aimed at reducing carbon emissions and boosting green technology. Under the scheme, electric cars and two-wheelers will be eligible for subsidies. The policy also plans to increase charging infrastructure across metro cities."

Prompt:

Summarize this news article in 2–3 lines.

Output:

The government introduced a new EV policy offering subsidies for electric vehicles and aims to expand charging stations in major cities to reduce carbon emissions.

2. Summarize a Research Abstract

Original Abstract:

"Deep learning models have shown significant improvements in medical image analysis tasks. These models, especially convolutional neural networks (CNNs), can detect anomalies in X-rays and MRIs with high accuracy. This paper explores CNN-based architectures for early disease diagnosis."

Prompt:

Summarize the abstract in one paragraph.

Output:

The paper highlights how deep learning, particularly CNNs, enhances medical image analysis and can detect diseases early through accurate interpretation of X-rays and MRIs.

3. Rewrite an Email – Formal Tone

Original Email:

"Hey! Just wanted to let you know I can't attend the meeting tomorrow. Something urgent came up. Hope that's okay!"

Prompt:

Rewrite this email in a formal tone.

Output:

*Dear mam,
I regret to inform you that I will be unable to attend tomorrow's meeting due to an urgent personal matter. I apologize for the inconvenience and hope for your understanding.
Sincerely,
Pawar Avishkar*

4. Rewrite an Email – Informal Tone

Original Email:
"Dear Sir, I will not be able to join the project discussion meeting today as I am unwell. Kindly excuse my absence."

Prompt:

Rewrite this email in a friendly and informal tone.

Output:
Hey! Just wanted to say I'm feeling a bit under the weather today, so I won't make it to the project meeting. Hope that's okay. Thanks!

Summary and Transformation Report

Task	Prompt Type	Output Quality	Notes
News Article Summary	Instructional	High	Clear and concise summary
Research Abstract Summary	Instructional	High	Captures all key points
Email – Formal Rewriting	Tone transformation	High	Maintained politeness and structure
Email – Informal Rewriting	Tone transformation	High	Natural and friendly in tone

Lab 5: ChatGPT in Code Generation and Debugging

Objective: Explore how ChatGPT can assist in programming.

Activities:

- Generate Python, C++, or Java code from prompts
- Debug a given code snippet using ChatGPT

Output: Compare ChatGPT's code with expected output.

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

Expected Output:

Correctly identifies whether a number is prime.

Accuracy:  100% correct.

2. Generate C++ Code from Prompt

Prompt:

Write a C++ program to reverse a string.

ChatGPT Output:

```
#include <iostream>

#include <string>

#include <algorithm>

using namespace std;

int main() {

    string str;

    cout << "Enter a string: ";

    cin >> str;

    reverse(str.begin(), str.end());

    cout << "Reversed string: " << str << endl;

    return 0;

}
```

Expected Output:

Reverses any input string.

Accuracy:  100% correct.

3. Debug a Given Python Code

Given Code: `def add_numbers(a, b)`
 `return a + b`
 `print(add_numbers(5 10))`

Prompt:

Find and fix the errors in this code.

ChatGPT Debugged Output:

```
def add_numbers(a, b): # Added colon
    return a + b







print(add_numbers(5, 10)) # Added comma between arguments
```

Expected Output:

Correctly prints **15**.

Accuracy:  Fixed all syntax errors correctly.

Comparison Table

Task	Language	ChatGPT Output	Expected Output	Accuracy	Remarks
Prime number checker	Python			100%	Efficient, correct logic
String reversal	C++			100%	Used STL <code>reverse()</code>
Debug code (syntax)	Python			100%	Errors identified and

errors)

fixed

Lab 6: Domain-Specific Applications

Objective:

Use ChatGPT for solving domain-specific tasks.

Activity Chosen:

Educational Quiz Generation

Prompt Design:

Prompt:

Generate a multiple-choice quiz for Class 10 History based on the chapter "Nationalism in India" from the NCERT textbook. Each question should have 4 options with the correct answer marked separately.

ChatGPT Output:

Chapter: Nationalism in India

Quiz:

1. Who started the Non-Cooperation Movement?
 - a) Bal Gangadhar Tilak
 - b) Subhas Chandra Bose
 - c) Mahatma Gandhi
 - d) Jawaharlal Nehru

✓ Answer: c) Mahatma Gandhi
2. Which incident led to the calling off of the Non-Cooperation Movement?
 - a) Jallianwala Bagh massacre
 - b) Chauri Chaura incident
 - c) Rowlatt Act
 - d) Simon Commission

✓ Answer: b) Chauri Chaura incident
3. Which of the following was NOT a feature of the Civil Disobedience Movement?
 - a) Breaking of Salt Law

- b) Boycott of foreign cloth
- c) Demands for Dominion Status
- d) Demand for complete independence
- ✓ Answer: d) Demand for complete independence

4. When was the Dandi March launched?

- a) 1919
- b) 1920
- c) 1930
- d) 1942
- ✓ Answer: c) 1930

5. Who led the tribal movement in Andhra Pradesh during the Non-Cooperation Movement?

- a) Baba Ramchandra
- b) Birsa Munda
- c) Alluri Sitarama Raju
- d) Khan Abdul Ghaffar Khan
- ✓ Answer: c) Alluri Sitarama Raju

Evaluation of Output:

Aspect	Evaluation
Relevance	✓ Highly relevant to NCERT Chapter
Accuracy of Content	✓ Historically accurate
Clarity of Format	✓ Clear MCQ structure with answers
Usefulness in Education	✓ Ready for use in school quizzes

Remarks:

This task shows how ChatGPT can efficiently generate high-quality quizzes aligned with academic content. It saves time for teachers and is adaptable for different subjects and grade levels.

