

# Assignment 03: ChatGPT in Action — Expanded Report

This report explores how ChatGPT can assist with writing, information extraction, coding, and quiz generation. It covers six lab activities with clear explanations and examples to demonstrate ChatGPT's capabilities.

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## Lab 1: Understanding ChatGPT

Goal: Learn how ChatGPT works and what it can do.

1. What It Is: ChatGPT is an AI chatbot developed by OpenAI. It can answer questions, generate content, and support learning tasks. It's based on a machine-learning model called the Transformer, which excels at language understanding.
2. How It Learns: ChatGPT is trained on large text collections—books, websites, and articles. It breaks sentences into smaller units (tokens) and uses attention mechanisms to capture relationships among words.
3. Training Phases:
  - o Pre-training: The AI predicts missing words in millions of sentences to learn grammar and meaning.
  - o Fine-tuning: Human reviewers rate outputs, guiding the model toward accurate and safe responses.
4. Key Abilities:
  - o Answer questions with clarity or depth
  - o Summarize long passages into concise points
  - o Translate text between languages
  - o Rewrite content in a formal or informal tone
  - o Structure information into tables, JSON, or lists

Example:

- Input: "Explain photosynthesis simply."
- Output: "Plants use sunlight, water, and carbon dioxide to produce food and oxygen."

ChatGPT is valuable in education, healthcare, business, and many other fields.

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## Lab 2: Types of Prompts

Goal: Practice crafting different prompts and observe ChatGPT's responses.

- Instructional Prompt: Direct command. Example: "List three uses of artificial intelligence."
- Interrogative Prompt: Question format. Example: "What is machine learning?"
- Zero-Shot Prompt: No examples provided; the model applies its knowledge directly.
- Few-Shot Prompt: Includes examples to guide the response format.

Prompt Type	Speed	Reliability	Ideal Use Cases
Instructional	Fast	High	Step-by-step guides, lists
Interrogative	Medium	Moderate	Concept explanations
Zero-Shot	Fast	Variable	Simple, common tasks
Few-Shot	Medium	High	Custom formats

Selecting the appropriate prompt type improves output quality.

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## Lab 3: Extracting Information from Text

Goal: Convert an unstructured sentence into a structured format.

Original Text:

"John Doe, Software Engineer at TechSolutions Inc., can be reached at [john.doe@example.com](mailto:john.doe@example.com) or +1-555-1234. LinkedIn: [linkedin.com/in/johndoe](https://linkedin.com/in/johndoe). Graduated from MIT in 2022."

ChatGPT Output (JSON):

```
{
  "name": "John Doe",
  "role": "Software Engineer",
  "email": "john.doe@example.com",
  "linkedin": "https://linkedin.com/in/johndoe",
  "graduation_year": 2022
}
```

This structure is ideal for applications, websites, and databases.

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## Lab 4: Summarizing and Changing Tone

Goal: Use ChatGPT to condense text or adjust its style.

Summary Example:

Original: The city council approved a \$10 million plan to install green infrastructure in flood-prone areas.

Summary: The city authorized a \$10 million green infrastructure project for flood-prone zones.

Tone Adjustment Example:

Informal: "Send the slides ASAP!"

Formal: "Please share the presentation slides at your earliest convenience."

ChatGPT adapts content to suit different audiences and purposes.

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## Lab 5: Writing and Debugging Python Code

Goal: Leverage ChatGPT to generate code and fix simple errors.

Function Generation Example:

```
def average_score(csv_path):  
    import csv  
    total, count = 0.0, 0  
    with open(csv_path, newline='') as f:  
        for row in csv.DictReader(f):  
            try:  
                total += float(row['score'])  
                count += 1  
            except ValueError:  
                continue  
    return round(total / count, 2) if count else 0.0
```

This function reads scores from a CSV file and returns the average.

Debugging Example:

```
# Incorrect  
print("Hello, {user}!")  
  
# Correct  
print(f"Hello, {user}!")
```

The fixed version uses an f-string to include the user's name correctly.

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## Lab 6 :Domain-Specific Applications

### Simulated Conversation: Patient and Medical Chatbot

**Chatbot:**

Hello! I'm your virtual health assistant. I understand you have a sore throat and mild fever. I'll ask a few questions to better understand your symptoms. Is that okay?

**Patient:**

Yes, that's okay.

**Chatbot:**

Thanks!

1. How long have you had the sore throat and fever?

**Patient:**

It started yesterday morning.

**Chatbot:**

Got it.

2. Is the sore throat worse at any specific time of day, like in the morning or evening?

**Patient:**

It feels worse in the morning when I wake up.

**Chatbot:**

Understood.

3. Are you experiencing any other symptoms? For example, cough, headache, body aches, or a runny nose?

**Patient:**

Just a mild headache and some fatigue. No cough or runny nose.

**Chatbot:**

Okay.

4. Are you able to swallow food and drinks comfortably, or is it painful?

**Patient:**

Swallowing is a bit painful, but I can still eat soft foods and drink warm liquids.

**Chatbot:**

Thanks.

5. Have you noticed any swelling, white spots, or pus on your tonsils or throat?

**Patient:**

There is some swelling, but I don't see any white spots.

**Chatbot:**

Based on your symptoms, it sounds like you might have a mild viral throat infection, which is quite common and often resolves on its own within a few days.

# General Advice

Stay hydrated – drink warm water, herbal tea, or soup

Rest – let your body recover

Gargle with warm saltwater 2–3 times a day

You can take paracetamol or ibuprofen to reduce fever and throat pain (unless you're allergic)

# See a Doctor If

Your symptoms last more than 4–5 days

You develop a high fever (over 101°F or 38.3°C)

You have difficulty breathing or swallowing

You notice white patches, pus, or worsening pain

# Chatbot:

Would you like help finding a nearby clinic or doctor?

# Patient:

No, I'll wait a day or two and see how it goes. Thank you.

# Chatbot:

You're welcome! Get plenty of rest and fluids. If anything worsens, please reach out to a healthcare provider. Take care!