# Prompt Engineering Research For KG Creation

## 1/ OpenAI Prompt Engineering Guide:

URL: <https://platform.openai.com/docs/guides/prompt-engineering>

**Prompt engineering** is the process of writing effective instructions for a model, such that it consistently generates content that meets your requirements.

Some prompt engineering techniques work with every model, like using message roles. But different model types (like reasoning versus GPT models) might need to be prompted differently to produce the best results. Even different snapshots of models within the same family could produce different results. So as applications become more complex, it is strongly recommended that:

+ Pinning your production applications to specific model snapshots (like gpt-4.1-2025-04-14 for example) to ensure consistent behavior.

+ Building evals that measure the behavior of your prompts so you can monitor prompt performance as you iterate, or when you change and upgrade model versions.

### Tools and techniques for constructing prompts:

**1/ Messages roles and instruction following:**

Roles: Different roles can be assigned to the AI chatbots. This technique can be used to adjust the tone of the response and the way that the AI chatbot responses to the a particular request from a prompt.

+ Ex: You are a cultural knowledge researcher’s assistant.

Instructions: The instructions parameter gives the model high-level instructions on how it should behave while generating a response, including tone, goals, and examples of correct responses.

+ Ex: Express the answer in a Cypher query format. Use comments in the Cypher query codes.

**2/ Reusable prompts:**

Prompts can be reused to ensure that the response’s accuracy and quality is similar to the original prompt. Therefore, prompts that are known to extract high quality and accurate responses from AI models can be reused to generate prompts that achieve a similar result.

Prompts can be reused by introducing placeholders that can be changed into any suitable nouns depending the context of the request while the structure of the prompt remains the same.

Ex: You are a {assign\_role}. Extract all facts and relationships from {document\_name} then place them in tabular format. Ex : {an\_example}

**3/ Few-shot learning:**

Providing one or multiple examples (one or multi-shot learning) in a single prompt helps the model picks up certain patterns that is required in the response. This prompting technique allows the model to quickly learn how to response to a request without any fine-tuning involved.

Each example should contain an input and an expected output. When providing examples, try to show a diverse range of possible inputs with the desired outputs.

Ex: Extract all facts from the attached research paper. Look at the following examples: These fishing boats are built traditionally by the rural carpenters with wooden planks. Seine net was the most usable gear by the fishermen constituting 78.15%. Then, identify all relationships within the extracted facts.

**4/ Include relevant context:**

Context regarding the background behind the prompt’s motivation or any details that are important in answering the prompt can be included in the prompt to make the response more relevant to the prompt request.

There are a few common reasons why it might be necessary to do this:

+ To give the model access to proprietary data, or any other data outside the data set the model was trained on.

+ To constrain the model's response to a specific set of resources that you have determined will be most beneficial.

Ex: Read the attached research paper about cultural fishing knowledge. Extract all facts and relationships from the paper which contain cultural fishing knowledge from the local fisherfolk. Make sure to ignore all research methodologies related facts.

### Sample prompts relating to extracting facts and generating KG queries:

**Prompt 1:** Consider yourself as a research assistant, extract data for knowledge graph for fisherfolk in Bangladesh from the attached paper, extract all facts, relationships among the facts and represent the relationships in Cypher query format, your goal is to extract important information that is important for fisherfolk in Bangladesh to be preserved in a Knowledge Graph. For example: These fishing boats are built traditionally by the rural carpenters with wooden planks.

**Prompt 2:** You are cultural knowledge research assistant. Your task is to extract all tacit fishing knowledge facts from the attached paper, then translate them into relationships, and to Cypher queries. Your goal is to extract all important information for fisherfolk in Bangladesh to be stored in a Knowledge Graph (KG) and avoid all unrelated data. For example: These fishing boats are built traditionally by the rural carpenters with wooden planks. -> Fishing boats are built traditionally by rural carpenters with wood planks -> CREATE (fishing\_boat:FishingCraft {name: 'Fishing Boat', description: 'Traditional fishing boat'}) CREATE (rural\_carpenter:Artisan {type: 'rural carpenter', skill: 'boat building'}) CREATE (rural\_carpenter)-[:BUILDS\_WITH {method: 'traditional', material: 'wood planks'}]->(fishing\_boat).