Use Case Selection: Automated Customer Feedback Analysis and Response Generation

Rationale: This is a common and practical business need. Companies receive vast amounts of customer feedback (reviews, surveys, support tickets). Manually processing this is time-consuming. An LLM system can:

1. **Analyze Sentiment:** Understand if the feedback is positive, negative, or neutral.
2. **Extract Key Issues:** Identify the specific topics or problems mentioned.
3. **Categorize Feedback:** Group feedback by common themes (e.g., pricing, usability, customer service).
4.
5. **Draft Responses:** Generate context-aware, empathetic, and appropriate draft replies for human review or even automated sending in some cases.

This use case benefits from advanced LLM capabilities for nuance in understanding sentiment/issues and generating human-like text. It's complex enough to warrant techniques beyond simple prompting.

Advanced Prompt Engineering Techniques Selected

1. **Chain-of-Thought (CoT) Prompting:** Used during the analysis phase. Instead of just asking for the sentiment and key issues, we'll instruct the LLM to "think step-by-step" to justify its analysis. This improves accuracy, especially for mixed or nuanced feedback, and provides transparency into the LLM's reasoning.
2.
3. **Few-Shot Prompting:** Used during the response generation phase. We provide the LLM with a few examples (shots) of good responses for different types of feedback (positive, negative, neutral). This helps guide the LLM towards the desired tone, style, and structure for the replies, making them more consistent and appropriate.
4. **Prompt Chaining / Task Decomposition:** The overall process is broken down into distinct steps (Analyze -> Generate Response), each handled by a specific, tailored prompt. The output of one step feeds into the next.

System Design Documentation: Flowchart

Customer Feedback Processing with LLMs

ANALYSIS PIPELINE

Raw Customer Feedback → Call LLM for Analysis

Chain-of-Thought Prompt → Multi-Aspect Analysis

- Structured Parsing
- Identify sentiment, detect key issues, explain reasoning, output in JSON

Multi-Aspect Analysis → Extract Structured Data → Structured Data JSON

RESPONSE PIPELINE

Call LLM for Response

Few-Shot Template → Generate Context-Aware Response

Quality Check → Validate and Format Response

Grammar and spelling accuracy, tone consistency with brand guidelines

Sentiment analysis summary, key issues and categories, reasoning behind findings

Validate and Format Response → Output Draft Response and Analysis Report