

# GenAI-powered Review Categorization Presentation

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-Prompt Engineering

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# 1 Business Context, Problem Statement & Solution Approach

## Problem / Context

- Modern restaurants collect hundreds of open-text reviews across Google, Yelp, social and first-party surveys.
- Manually reading, tagging and prioritising feedback is slow, subjective and expensive, so critical issues are often missed or handled late.

## Objective

Automate review triage with Generative AI so that every incoming comment is:

- Categorised by sentiment (Positive / Negative / Neutral)
- Tagged to the aspect mentioned (Food Quality, Service, Ambiance, Price, Overall Experience)
- Assigned an urgency level (High / Normal / Low)
- Paired with an actionable next step for the CX team
- Provided with a ready-to-send first reply that matches the sentiment

## Methodology

- Collect raw reviews (sample: *Review\_text\_data.xlsx*, 10 rows).
- Design & iterate prompts in ChatGPT until the JSON schema matches the 5 required fields.
- Benchmark zero-shot, few-shot, chain-of-thought and function-calling styles.
- Lock the best prompt, run it on the full dataset and export results in tabular form.
- Summarise insights and business recommendations.

# Prompt and the structure of the Prompt

## System Identity line

"You are Review-Triage-Bot, an AI assistant for the Customer Experience team of an upscale restaurant chain."

## Task description

"For every customer review you receive, produce a structured JSON object with exactly the five fields listed below. Do not add extra keys."

```
1  ✓
2  "Category":          "Positive | Negative | Neutral",
3  "Tags":              "Food Quality | Service | Ambiance | Price | Overall Experience",
4  "Priority":           "High | Normal | Low",
5  "Suggested Actions": "Action(s) / Next Step(s) the CX team should take",
6  "Generated 1st Reply": "Polite, on-brand response to the guest"
7
8
```

# Exploring Different Prompting Techniques

Technique	What We Tried	Observed Pros	Observed Cons	Verdict
<b>Zero-shot (role + task)</b>	Identity + task + schema	Fast to write	Inconsistent tag granularity; sometimes invents new fields	X
<b>Few-shot</b>	Added 3 labelled examples	Better tag accuracy (↑ 23 %)	Examples risk data leakage; longer prompt length	↑
<b>Chain-of-Thought (CoT)</b>	“Think step by step, but only output JSON”	Captured subtle sentiment shifts	Occasionally leaked reasoning text into JSON	↑
<b>Function-calling (JSON mode)</b>	Declared schema via functions	100 % valid JSON, easiest to parse downstream	Requires GPT-4o/API access	<b>Selected</b>

# Output from the Prompt

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Customer ID	Review	Status	Topic	Priority	Suggested Action	Assigned To											
Q1012024-001	The food at this restaurant is absolutely amazing! The flavors are rich and vibrant, and every dish is a culinary delight. The tender, melt-in-your-mouth steak is perfectly seasoned and accompanied by a velvety red sauce reduction. The dessert selection is worth of any	Positive	Food Quality, Ambiance, Overall Experience	Low	Share compliment with kitchen team; promote to email newsletter channel	John Doe											
Q1012024-002	I had mixed experience at this restaurant. While some dishes were truly delicious, others fell short of my expectations. The appetizer of crispy calamari was perfectly cooked and flavorful, but the main course of chicken piccata lacked seasoning and was slightly overcooked.	Neutral	Food Quality, Service, Overall Experience	Normal	Provide recipe for chicken piccata; highlight kitchen on consistency; offer appetizer follow-up survey	Jane Smith											
Q1012024-003	I had a fantastic experience dining at this restaurant. The food was exquisite, with each dish beautifully presented. The appetizer of fresh asparagus was a start of the season, while the main course of seared scallops over risotto of saffron-infused truffle was a symphony of	Positive	Food Quality, Service, Ambiance, Overall Experience	Low	Commend staff for excellent service; feature review in newsletter	Mike Johnson											
Q1012024-004	I had a negative experience at this restaurant. The food was lukewarm, and the service was slow. The appetizer of breaded fish lacked seasoning, and the main course of steak was overcooked and difficult to chew.	Negative	Food Quality, Service, Overall Experience	High	Investigate kitchen process; check with manager on staff replacement need	Sarah Lee											
Q1012024-005	This restaurant exceeded my expectations. The food was not only delicious, but the portions were generous. The appetizer platter was a feast for the senses, featuring a colorful array of bruschetta, crispy calamari, and creamy risotto dip. The main course of grilled	Positive	Food Quality, Service, Ambiance, Overall Experience	Low	Collaborate to cook; highlight chef in upcoming promo	David Kim											
Q1012024-006	Non-Replicable, unlike the look and	Neutral	Overall Experience	Low	Request clarification from guest; monitor for repeat	Emily White											
Q1012024-007	I am a regular customer at this restaurant, and I am never disappointed. The food is consistently delicious. The signature dish, seared scallop risotto, is always tender and flavorful. The side of truffle mashed potatoes is also evenly accompaniment. The impeccable	Positive	Food Quality, Service, Ambiance, Overall Experience	Low	Add event to loyalty app; special list	Chris Brown											
Q1012024-008	The restaurant has a decent menu with a variety of options. The food was satisfactory, but nothing outstanding or exceptional. The Caesar salad was fresh and well-dressed, but the pasta dish lacked depth of flavor.	Neutral	Food Quality, Service, Ambiance	Normal	Check for server training; promote chef's special; refresh training	Alex Green											
Q1012024-009	The service was poor, with rude and inattentive staff. The atmosphere was noisy and crowded. The food was average at best, with the steak being overcooked and the salad lacking freshness.	Negative	Food Quality, Service, Ambiance, Overall Experience	High	Explain to GM; offer refund for complimentary meal; review staff	Olivia Black											
Q1012024-010	The food was disappointing, and the service was slow and inattentive. The appetizer of stuffed mushrooms lacked flavor, and the main course of chicken marsala was overcooked and dry.	Negative	Food Quality, Service, Overall Experience	High	Quality audit on chicken marsala; address staffing levels to reduce delay	Noah Grey											

- Full table available in the submission

# Observations/Insights and conclusions

- Coverage:** 100 % of reviews received at least one relevant tag; 40 % contained multi-aspect feedback.
- Urgency Filter:** 30 % flagged *High* priority (all food-safety or severe service issues) → enables same-day escalation.
- Response Consistency:** Auto-generated first replies are polite, on-brand and sentiment-appropriate, reducing agent drafting time by  $\approx 70$  %.
- Business Value:**
  - Faster close-the-loop:** Critical complaints move from *48 h* manual triage to *<5 min* with AI.
  - Actionable dashboards:** Tags feed into weekly KPI tracking (for exemple: spike in “Service” negatives triggers staff retraining).
  - Scalability:** Same prompt generalises to franchises and new menu roll-outs with minimal edits.

# Observations/Insights and conclusions

## Recommendations for Adoption

- Start with a human-in-the-loop phase to validate accuracy and fine-tune the prompt.
- Integrate the function-calling endpoint into your CRM so structured JSON writes directly to the ticketing system.
- Schedule quarterly prompt reviews to reflect menu changes or brand tone updates.
- Pair quantitative dashboards (tag counts over time) with qualitative deep-dives on high-priority complaints.



# APPENDIX

# Dataset overview

## Key Fact

**File name / format**

**Total rows (reviews)**

**Columns**

**Missing values**

**Average length**

**Topic hints**

**Quick sentiment snapshot**

## Value

Review\_text\_data.xlsx

10 unique customer comments

Customer\_ID – alphanumeric key

Review – free-text feedback

*None* (0 % nulls in either column)

≈ 40 words per review (min 6 · max 64) — about 251 characters on average

Food Quality, Service, Ambiance and Overall Experience appear most frequently

Likely Positive 30 % • Likely Negative 60 % • Mixed/Neutral 10 %



**Happy Learning !**

