2403a51254

Laxmi prasanna

AI ASSISTED CODING

**Lab 4: Advanced Prompt Engineering: Zero-shot, one-shot, and few-shot  
techniques**  
Objective: To explore and compare Zero-shot, One-shot, and Few-shot prompting  
techniques for classifying emails into predefined categories using a large language  
model (LLM).  
Suppose that you work for a company that receives hundreds of customer emails daily.  
Management wants to automatically classify emails into categories like "Billing",  
"Technical Support", "Feedback", and "Others" before assigning them to appropriate  
departments. Instead of training a new model, your task is to use prompt engineering  
techniques with an existing LLM to handle the classification.  
Tasks to be completed are as below

**1. Prepare Sample Data:**

Create or collect 10 short email samples, each belonging to one of the 4  
categories

1. **Billing**
   * "I was charged twice for my subscription this month. Please help."
2. **Technical Support**
   * "The app freezes every time I try to open a PDF file."
3. **Feedback**
   * "I love the new design of your website, it’s much easier to use."
4. **Others**
   * "Could you provide me with your office address for courier delivery?"
5. **Billing**
   * "My payment was deducted but it is not showing in my account balance."
6. **Technical Support**
   * "The update caused my phone to restart randomly, please fix this bug."
7. **Feedback**
   * "It would be great if you could add more language options in the app."
8. **Others**
   * "I am a student doing research, can I get details about your company history?"
9. **Billing**
   * "I want to change my billing cycle from monthly to yearly subscription."
10. **Technical Support**

"I can’t log in to my account, it says incorrect password even though it’s right."

**2. Zero-shot Prompting**:  
Design a prompt that asks the LLM to classify a single email without providing  
any examples.

**Prompt:** Classify the following email into one of the categories:

Billing, Technical Support, Feedback, Others.

Email: "I have not received my invoice for last month."

**Output:**

**Category:** Billing

**3. One-shot Prompting:**Add one labeled example before asking the model to classify a new email.

**Prompt:**

Email: "Can you explain the additional charge on my bill?"

Category: Billing

Now classify this email:

Email: "The software crashes whenever I try to upload a file."

**Output:**

**Category:** Technical Support

**4. Few-shot Prompting:**  
 Use 3–5 labeled examples in your prompt before asking the model to classify a  
new email.

**Prompt:**

Here are some examples:

Email: "I have not received my invoice for last month." → Category: Billing

Email: "Your app is fantastic, I love the new update." → Category: Feedback

Email: "The login page doesn’t load on my phone." → Category: Technical Support

Now classify this email:

Email: "I would like to unsubscribe from your mailing list."

**Output:**

**Category:** Others

**5. Evaluation:**• Run all three techniques on the same set of 5 test emails.  
• Compare and document the accuracy and clarity of responses

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| | **ID** |  |  | **Email Text** | **True Category** | | --- | --- | --- | --- | --- | | T1 |  |  | I was charged twice for my subscription this month. Please help. | Billing | | T2 |  |  | The app freezes every time I try to open a PDF file. | Technical Support | | T3 |  |  | I love the new design of your website, it’s much easier to use. | Feedback | | T4 |  |  | Could you provide me with your office address for courier delivery? | Others | | T5 |  |  | My payment was deducted but it is not showing in my account balance. | Billing | |

**Zero-shot**: It worked okay, but the model sometimes got confused, especially with “Others.” Since it didn’t have any examples to learn from, it just guessed based on the wording.

**One-shot**: This was better. When I gave the model just one example, it had a clearer idea of what I wanted and made fewer mistakes.

**Few-shot:**This was the best. By showing the model a few different examples, it understood the categories much better and gave the most accurate results