Assignment 4.5

# Lab 4: Advanced Prompt Engineering: Zero-shot, one-shot, and few-shot techniques

* Name – G.Sanjansah ,
* Date –
* Subject – AI Assisted Coding
* Hall Ticket Number – 2503a52l20
* Student Mail Id – 2503a52l20@sru.edu.in

Note: Report should be submitted a word document for all tasks in a single  
document with prompts, comments & code explanation, and output and if  
required, screenshots

## 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.

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

• Example prompt:  
“Classify the following email into one of the following categories: Billing, Technical Support, Feedback, Others. Email: ‘I have not received my invoice for last month.’”

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

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

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

Requirements:  
• VS Code with Github Copilot or Cursor IDE and/or Google Colab with Gemini

Deliverables:  
• A .txt or .md file showing prompts and model responses.  
• A comparison table showing classification accuracy for each technique.  
• A short reflection on which method was most effective and why  
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