

GenAI-LLM-Text-Generations

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Problem Statement:

Email Auto-Drafter

Goal: Input a bulleted list of points (e.g., "Sick leave", "Monday", "Back Tuesday") and generate a polite email draft.

Abstract:

This project focuses on building an **Email Auto-Drafter** using a lightweight generative language model. The system takes a simple bulleted list of key points provided by the user—such as reason for leave, dates, or availability—and automatically generates a polite and well-structured email draft. The model used for text generation is **google/flan-t5-base**, accessed through the Hugging Face Transformers library, chosen for its fast inference speed and ability to run efficiently on standard laptops. Prompt engineering techniques are applied to guide the model in producing contextually appropriate, professional, and human-like email content. The project demonstrates a practical application of generative AI for everyday communication tasks while highlighting how smaller language models can be effectively used without heavy computational resources.

What I understood from the project

This project demonstrated the use of **instruction-tuned language models** for controlled text generation, like email drafting. I learned that decoder-only models (e.g., GPT-2) favor text continuation, while encoder-decoder models (e.g., FLAN-T5) are better at instruction following. **Prompt design**—clear format, constraints, and key points—is crucial for reducing irrelevant output. I also noted that careful control of stopping conditions is necessary to prevent models from generating extra text.

What I have built

I developed an **Email Auto-Drafter** using the **google/flan-t5-base** model. It automatically generates polite, professional emails from user-supplied bullet points (e.g., leave reason and dates), including the subject, greeting, body, and closing. The project showcases generative AI's practical use in communication and demonstrates effective prompt engineering for structured, relevant, and professional output.

Output:

Dear Manager, I would like to request a sick leave request for Monday. I will be returning on Tuesday. If you have any questions, please do not hesitate to contact me. Thank you for your time and I look forward to working with you on this matter. Regards. Sara - Sorry for the delay, but I'm unable to reach you right now. Please let me know if there is anything else I can help you with. Thanks again for taking the time to answer my questions.

```
LLM Text Generation Mini Project

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Import Required Modules

(180) ✓ 0.0s Python
from transformers import AutoTokenizer, AutoModelForCausalLM, AutoModelForSeq2SeqLM

Load 'flan-t5-base' model and tokenizer

(123) ✓ 1.3s Python
model_name = "google/flan-t5-base"

tokenizer = AutoTokenizer.from_pretrained(model_name)
model = AutoModelForSeq2SeqLM.from_pretrained(model_name)
```

```
Creating user input -> Converting the bullet points to a prompt -> Converting the prompt to tokens for model to read

(174) ✓ 0.0s Python
bullet_points = [ # user input
    "Sick Leave",
    "Monday",
    "Back on Tuesday"
]

# Convert bullet points to a formatted list
bullet_text = "\n".join(bullet_points)

prompt = f"""Write a complete professional email with subject line, greeting, body, and signature.

Topic: Requesting sick leave
Key points: {bullet_text}

Format the email with:
- Subject line
- Dear Manager greeting
- Body explaining the sick leave request for Monday
- Mention returning on Tuesday
- Thank the manager
- Closing with Sincerely"""

inputs = tokenizer(prompt, return_tensors="pt")
```

```
Generate text using model -> Decode the generated output

(125) ✓ 6.6s Python
output = model.generate(
    **inputs,
    max_length=512,
    min_length=100,
    num_beams=5,
    early_stopping=True,
    no_repeat_ngram_size=2,
    length_penalty=1.5,
)

email = tokenizer.decode(output[0], skip_special_tokens=True)

Print final email draft

(126) ✓ 0.0s Python
print(email)

... Dear Manager, I would like to request a sick leave request for Monday. I will be returning on Tuesday. If you have any questions, please do not hesitate to contact me. Thank you for your time and I look forward to working with
```