

Cheat Sheet: Build GenAI Application With LangChain

Estimated time needed: 5 minutes

Package/Method	Description	Code Example
mkdir and cd	Create and navigate into a new project directory.	<pre>mkdir genai_flask_app cd genai_flask_app</pre>
Virtual environment	Set up a Python virtual environment for package management.	<pre>python3.11 -m venv venv source venv/bin/activate</pre>
pip install ibm-watsonx-ai	Install the IBM watsonx AI library for LLM interactions.	<pre>pip install ibm-watsonx-ai</pre>
Credentials	Authenticate with IBM watsonx AI using credentials.	<pre>from ibm_watsonx_ai import Credentials credentials = Credentials(url = "https://us-south.ml.cloud.ibm.com", # api_key = "<YOUR_API_KEY>")</pre>
Model parameters	Define parameters for model inference.	<pre>from ibm_watsonx_ai.metanames import GenTextParamsMetaNames params = { GenTextParamsMetaNames.DECODING_METHOD: "greedy", GenTextParamsMetaNames.MAX_NEW_TOKENS: 100 }</pre>
Model inference	Initialize an AI model for text generation.	<pre>from ibm_watsonx_ai.foundation_models import ModelInference model = ModelInference(model_id="ibm/granite-3-3-8b-instruct", params=params, credentials=credentials, project_id="skills-network")</pre>

Generating AI response	Use an AI model to generate text based on a prompt.	<pre> text = """ Only reply with the answer. What is the capital of Canada? """ print(model.generate(text)['results'][0]['generated_text']) </pre>
LangChain prompt templates	Define reusable prompt templates for different models.	<pre> from langchain.prompts import PromptTemplate llama3_template = PromptTemplate(template="""< begin_of_text >< start_header_id >system< end_header_id > {system_prompt}< eot_id >< start_header_id >user< end_header_id > {user_prompt}< eot_id >< start_header_id >assistant< end_header_id > """, input_variables=["system_prompt", "user_prompt"]) </pre>
LangChain chaining	Pipe a prompt template into an AI model to generate structured output.	<pre> def get_ai_response(model, template, system_prompt, user_prompt): chain = template model return chain.invoke({'system_prompt': system_prompt, 'user_prompt': user_prompt}) </pre>
Tokenization and prompt formatting	Specialized token formatting for different AI models.	<pre> # Llama 3 formatted prompt text = """ < begin_of_text >< start_header_id >system< end_header_id > You are an expert assistant who provides concise and accurate answers.< eot_id > < start_header_id >user< end_header_id > What is the capital of Canada?< eot_id > < start_header_id >assistant< end_header_id > """ </pre>
JSON output parser	Parse and structure AI-generated responses using LangChain.	<pre> from langchain_core.output_parsers import JsonOutputParser from pydantic import BaseModel, Field class AIResponse(BaseModel): summary: str = Field(description="Summary of the user's message") sentiment: int = Field(description="Sentiment score from 0 to 100") response: str = Field(description="Generated AI response") json_parser = JsonOutputParser(pydantic_object=AIResponse) </pre>

Enhancing AI outputs	Modify LangChain chaining to ensure structured JSON output.	<pre>def get_ai_response(model, template, system_prompt, user_prompt): chain = template model json_parser return chain.invoke({ 'system_prompt': system_prompt, 'user_prompt': user_prompt, 'format_prompt': json_parser.get_format_instructions() })</pre>
Flask API integration	Create an API endpoint for AI model interactions.	<pre>from flask import Flask, request, jsonify from model import get_model_response app = Flask(name) @app.route('/generate', methods=['POST']) def generate(): data = request.json model_name = data.get('model') user_message = data.get('message') if not user_message or not model_name: return jsonify({"error": "Missing message or model selection"}), 400 system_prompt = "You are an AI assistant helping with customer inquiries. Provide a concise response." try: response = get_model_response(model_name, system_prompt, user_message) return jsonify(response) except Exception as e: return jsonify({"error": str(e)}), 500 if name == 'main': app.run(debug=True)</pre>

Author

Hailey Quach



Skills Network