

E-commerce Customer Service: GA-Driven Chatbot Prompt Optimization

Team Name: Hackit

Team Member:

Lei Yang – Team Lead

Ambreen Hanif – Data Scientist

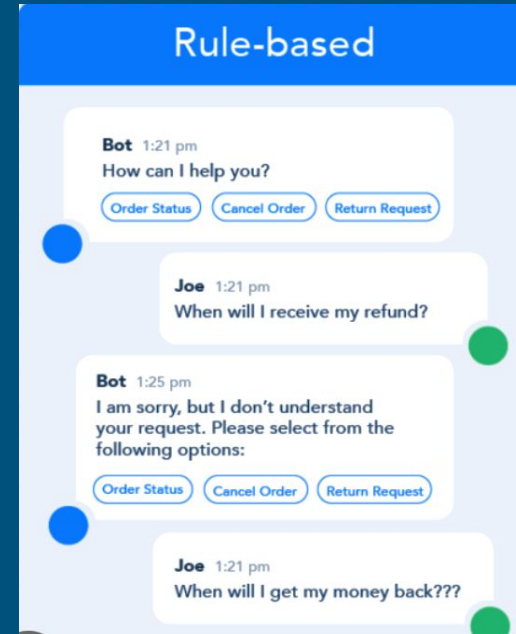
Abrren Chen – Data Engineer

PROJECT OBJECTIVE

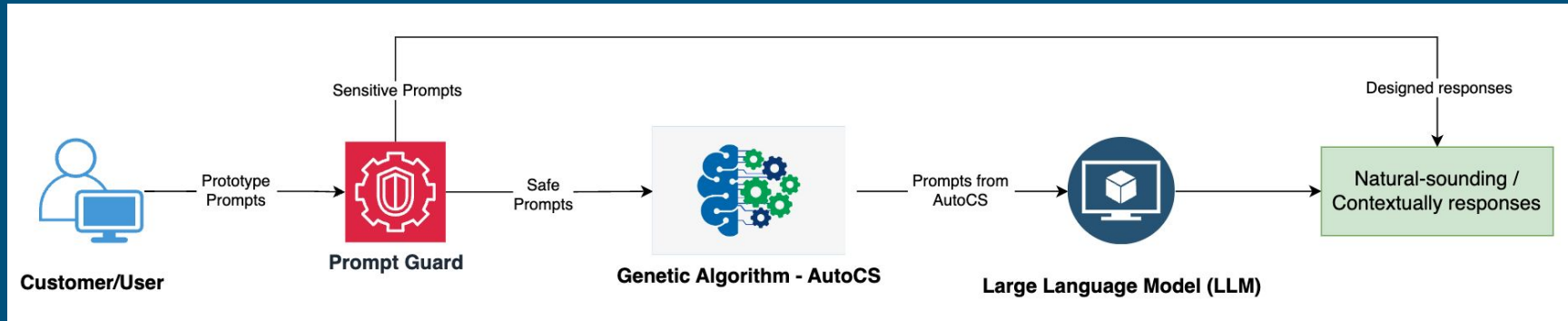
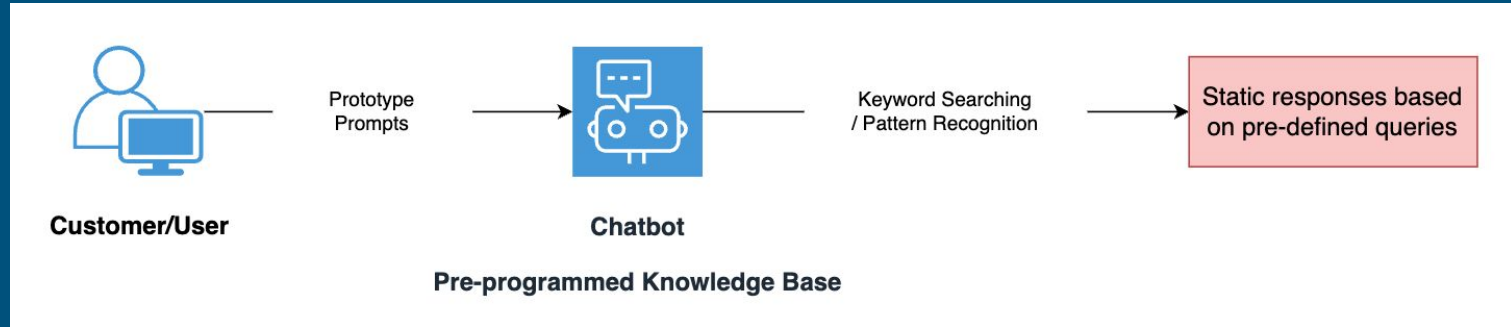
Project Objective/Goal: Optimise Ecommerce Customer Service (CS) Chatbot by utilizing Genetic Algorithm (GA) and Large Language Model (LLM).

Problem Description (Rule-based Chatbot):

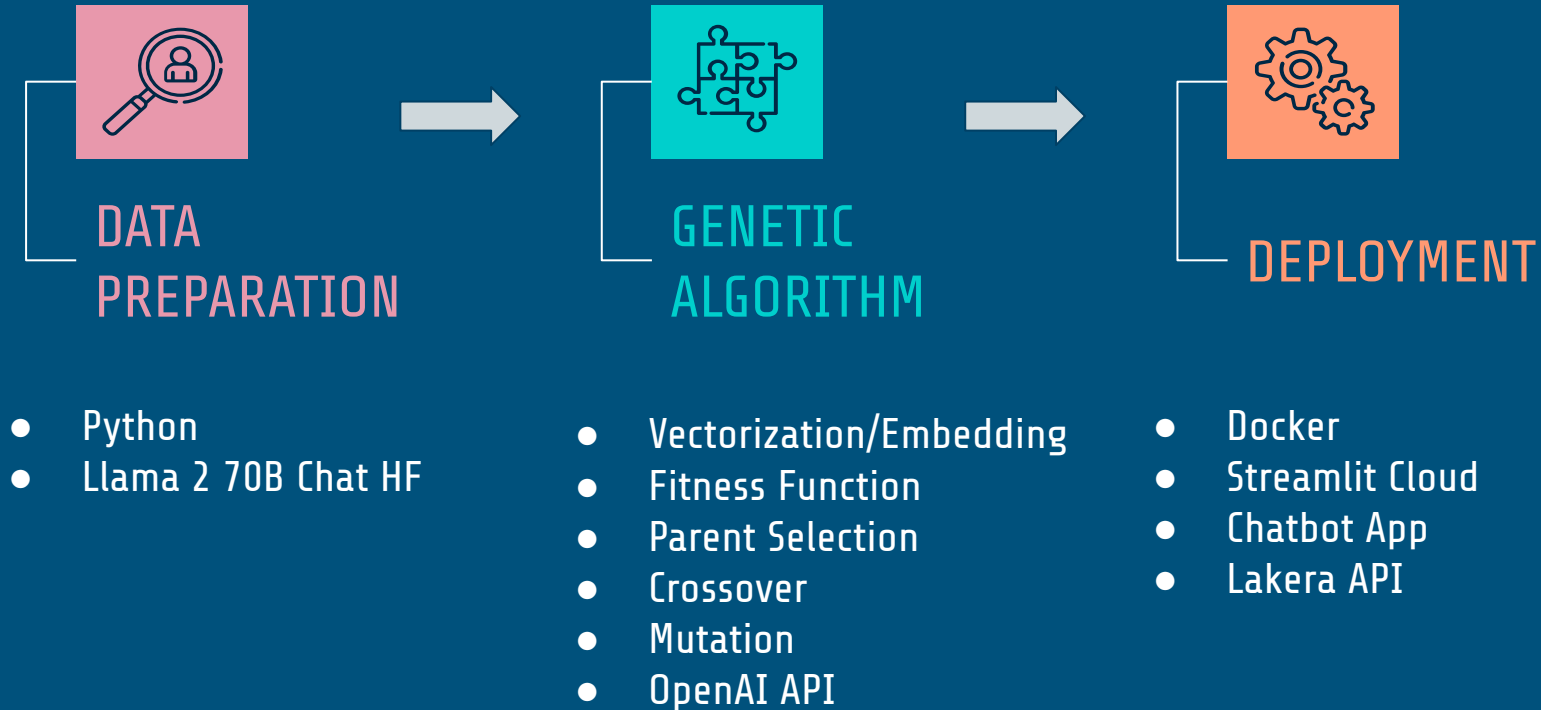
- Lack of context understanding
- Limited problem-solving abilities
- Lack of personalization
- Incapacity to learn



RULE-BASED CHATBOT VS AI-POWERED CHATBOT



METHODOLOGY/APPROACH



DATA PREPARATION

Prompt:

How do I create an account?

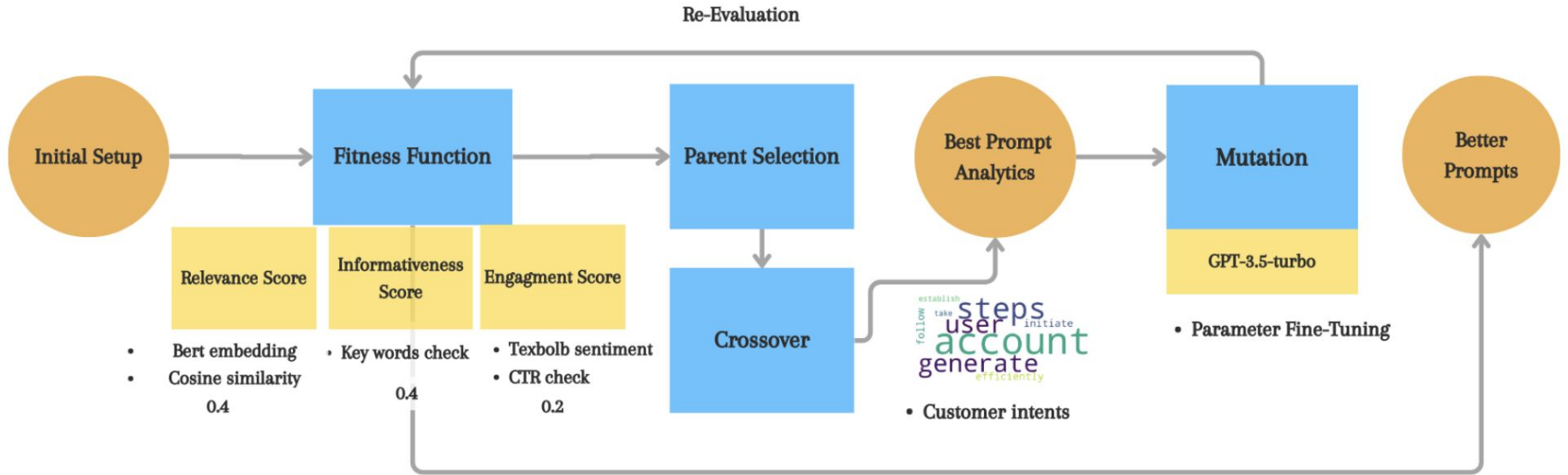
Llama Response:

Sure, I can help you create an account. To create an account, you'll need to provide some basic information such as your name, email address, and a password. Once you've provided that information, you'll be able to log in and access the site's features. Would you like me to walk you through the process step by step?

Ideal Response:

Sure, I can help you with that! To establish an account, you'll need to provide some personal information and set up a username and password. Here are the steps you can follow: 1. Go to the website of the service you want to use and click on the "Sign Up" or "Create Account" button. 2. Enter your first and last name, email address, and a unique username. 3. Choose a password and confirm it by entering it again in the next field. 4. Provide any additional information that may be required, such as your phone number or birthdate. 5. Read and agree to the terms of service and privacy policy. 6. Click on the "Create Account" button to complete the process. That's it! You now have an account and can log in using your username and password.

GENETIC ALGORITHM (GA)



RESPONSE COMPARISON BEFORE AND AFTER GA

How may I help you today 😊

How to create an account?



How to create an account?

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Fitness Score: 0.77

How may I help you today 😊

To establish an account, what steps should I take?

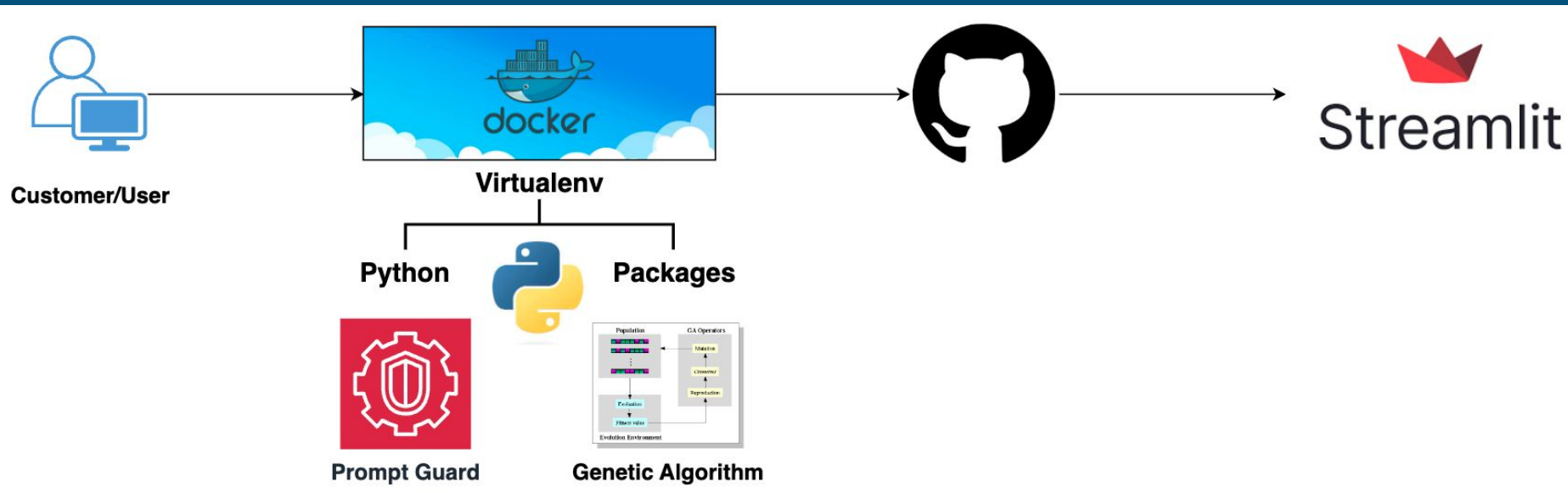


To establish an account, what steps should I take?

Sure, I can help you with that! To establish an account, you'll need to provide some personal information and set up a username and password. Here are the steps you can follow: 1. Go to the website of the service you want to use and click on the "Sign Up" or "Create Account" button. 2. Enter your first and last name, email address, and a unique username. 3. Choose a password and confirm it by entering it again in the next field. 4. Provide any additional information that may be required, such as your phone number or birthdate. 5. Read and agree to the terms of service and privacy policy. 6. Click on the "Create Account" button to complete the process. That's it! You now have an account and can log in using your username and password.

Fitness Score: 0.83

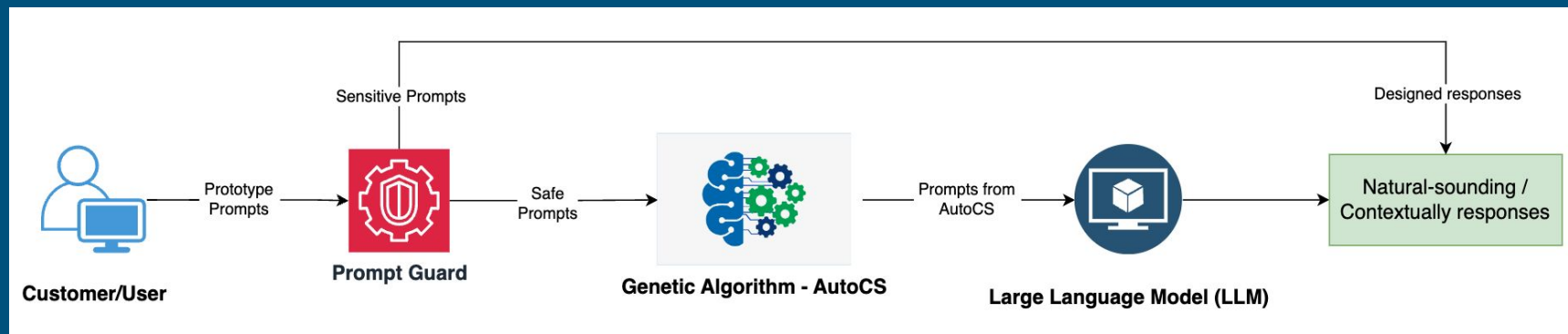
SOLUTION DEPLOYMENT



FUTURE WORK

- Build diverse prompt dataset and introduce online learning which can help continuously update dataset
- Improve fallback mechanisms and continuous monitoring
- Finetune the Large Language Model (LLM) according to specific user cases
- Enhance the chatbot interface by incorporating user-friendly functions.
- Enhance the prompt guard's filtering capabilities using GA capabilities.

HIGHLIGHTS OF OUR SOLUTION



Thanks for
listening
Any Questions