GiftGPT:
Using Artificial Intelligence to provide relationship-strengthening suggestions

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I. Introduction

A. Document Purpose/Overview

1. The purpose of this document is to describe the build process and specifics/requirements of an online system to process users' requests for gift ideas for an event or event. The system will be a new development that uses AI (artificial intelligence) abilities by integrating available AI/LLM (large language model) platforms such as OpenAI's GPT3.5/4. The system will be created by a team of three members during the summer (and early fall) of 2023. This document describes the scope, objectives, and goals of the new system. In addition to describing non-functional requirements, this document models the functional requirements with use cases, interaction diagrams, context diagrams, and class models. This document is intended to direct the design and implementation of the target system in an object-oriented language, integration of Open AI and cloud computing.

B. Project Summary

1. Date: 2023 July - November
2. Project Name: GiftGPT
3. Project Manager: Chiming Wang
4. Project Analysts: Chiming Wang, Erin Yalin Cai, Frankie Chong
5. Developers: Chiming Wang, Erin Yalin Cai, Frankie Chong

C. Background

1. Many people around the world face challenges to find gift ideas for events like birthdays, parties, anniversaries, etc. There are also major problems with gift ideas from current search engines (like Google) and e-commerce sites (like Amazon). These problems include, but are not limited to:
    a) Gifts are too commercial - gift ideas from current search engines/e-commerce sites usually are products for sale.
    b) Gifts are too impersonal - gift ideas from current search engines/e-commerce sites are usually mass-produced for mass consumption
2. AI/LLM technologies have been around for a long time, but recently, with the release of ChatGPT and GPT3/3.5/4, they have become a widespread and easily usable tool for online users around the world. AI tools can enhance our lives by doing research and providing the right information at the right time. However, AL/LLM prompt engineering is complicated for

many users, meaning most users will not be able to use all the potential of their AI chatbots. GiftGPT aims to engineer prompts for users automatically using a simple GUI.

D. Project Scope

1. The scope of this project is to develop a web-based system that integrates ChatGPT/AI/LLM functionalities to intelligently fulfill users' requests for gift ideas. This is a new system that will require the use of cloud services (Amazon AWS) for hosting and processing, and the APIs from Open AI.
2. The internal details of these purchased services are not part of this project. Issues of website security, other than password protection within the site, are not part of this project. Advertising of gifts, inventory control, and account billing are not part of this project.
3. In addition, a new database system MAY be created to store user and gift information. A language translator MAY be used or created on the website, but because the GPT LLMs already support multiple common languages, this is not needed.

E. System Purpose

1. Users
    a) Any user can benefit from GiftGPT, if they need bring a gift to a celebration. There are many cases of this happening every day. This includes, but is not limited to:
        (1) Friends who are invited to birthday parties
        (2) Couples celebrating their marriage anniversaries
        (3) Parents who give gifts to their children at graduation ceremonies
        (4) People who are invited to events and need to bring a gift
2. Location
    a) This web app will be available on the internet, at guhoo.com/giftgpt or giftgpt.guhoo.com.
3. Responsibilities
    a) The primary responsibilities of the new system are to:
        (1) provide secure access to users' information
        (2) provide users a text box to input their requests
        (3) allow users to specify the details of the special event
        (4) allow users to customize their requests and personal information
        (5) allow users to create accounts to store requests and fulfillment for future reference.

b) Other desired features of this system include, but are not limited to:
    (1) a modern look and feel throughout the website
    (2) full-text searches of the web pages a user has permission to access
    (3) on-line help in website navigation
    (4) password protection scheme for non-public web pages
    (5) translation of a web page to another language

4. The core of the project - GiftGPT will be developed to integrate the power of AI/LLM models to fulfill the needs/requests of users to obtain gift ideas for special events/ceremonies.

F. Functional Objectives

1. High Priority Objectives
    a) This system shall:
        (1) Allow users to input their requests in keywords, phrases, or multiple-choice options/checkboxes
        (2) Process user requests by applying ChatGPT/AI/LLM functionalities
        (3) Return descriptive and accurate answers based on user requests
2. Medium Priority Objectives
    a) This system shall:
        (1) Process complete sentences
        (2) Allow special characters
        (3) Auto-detect the users' language
3. Low Priority Objectives
    a) This system shall:
        (1) Use cookies to remember the users' preferences
        (2) Store users' requests in users' account
        (3) Allow password recovery

G. Non-functional Objectives

1. Reliability
    a) This system shall:
        (1) Be completely operational at least 99% of the time.
        (2) Have a maximum downtime of 15 minutes after a failure.
2. Usability
    a) A user who already is an internet user should be able to use the website in 6 seconds.

b) The number of web pages navigated to access the fulfillment page should not exceed 3.

3. Performance
    a) The system should be able to support 10,000 simultaneous users.
    b) The mean time to view a web page for US-based users shall not exceed 6 seconds.
    c) The mean time to display fulfillment information should not exceed 10 seconds.
4. Security
    a) The web app should not keep any user data, or give it to any third-party groups. If the web app keeps user data, it will do so with the user's explicit consent.
    b) The system shall provide password-protected access to web pages
5. Supportability
    a) The system should be able to accommodate and implement the latest available ChatGPT/GPT LLM models.
    b) The system should be viewable and usable from most internet connections and web browsers, including (but not limited to) Google Chrome, Firefox, and Microsoft Edge.
6. Online User FAQ
    a) The system should provide a tutorial page and FAQ web page that explains how to navigate the web app/GUI.
        (1) A customer support chatbot can also be developed to help users answer questions about GiftGPT (not part of the GiftGPT project, but related to it)
    b) The FAQ/tutorial page should be easily accessible.
7. Components that must be purchased
    a) OpenAI/ChatGPT API
    b) Amazon AWS cloud services
8. Interfaces
    a) The system must interface with:
        (1) The most modern ChatGPT/OpenAI LLMs (GPT 3.5/4)
        (2) Amazon AWS cloud services (EC2 instances)

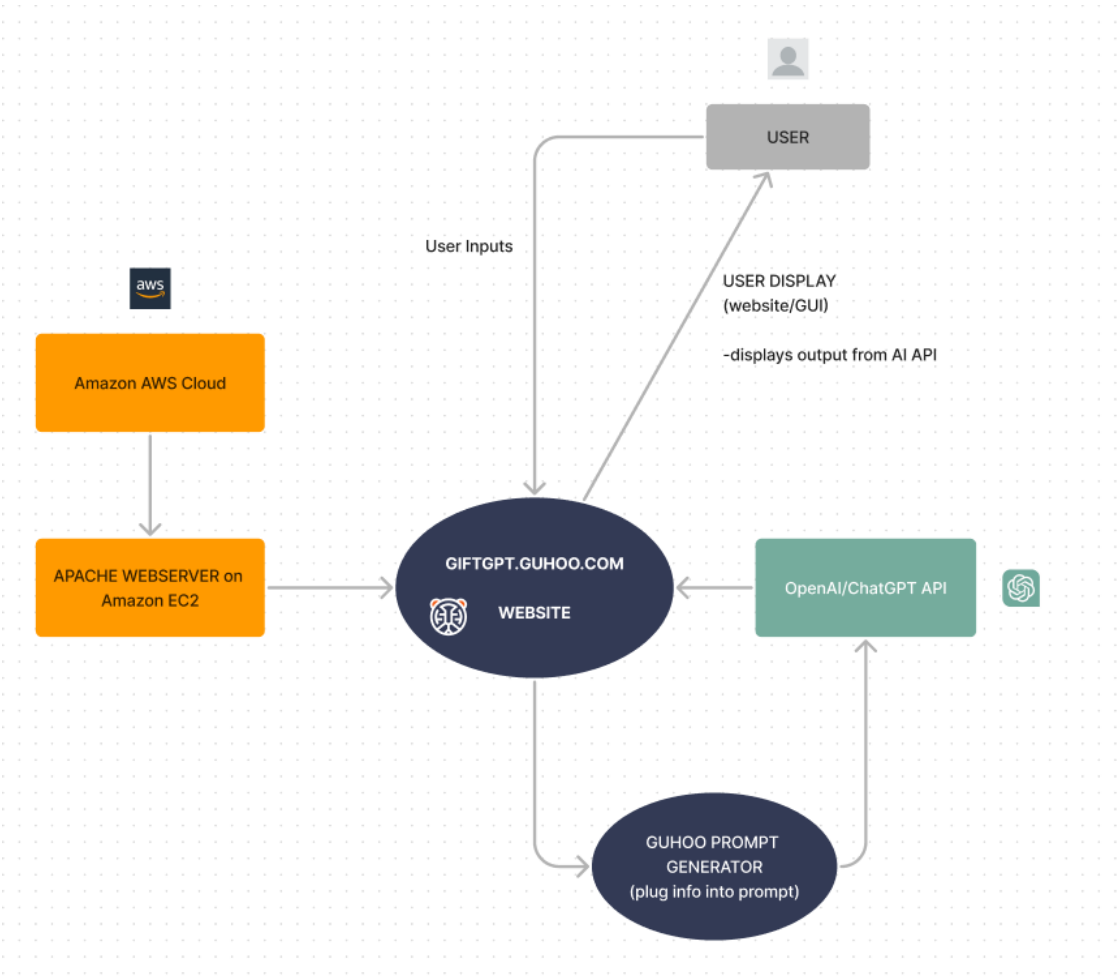
H. The Context Model

1. Context Goals - The goal of the system is to process users' gift search requests and return accurate information by:
    a) Allowing user information and user requests to be captured directly online

b) Providing users with the most accurate gift information.

c)

2. Context Chart



3. System Externals - These are vital components that are outside the system
    a) User: A user is any user of the system that may search for gift ideas by keyword or/and phrases for his/her special event.
    b) Gift: Gift information from online resources.
    c) Fulfillment: Gifts and suggestions that fulfill the users' requests.
    d) OpenAI/ChatGPT LLMs: to provide AI/LLM processing/responses
4. User Interfaces
    a) The web app should be able to be accessed from any computing device with access to the internet. This includes any computing device running browsers such as (but not limited to) Google Chrome, Firefox, and Microsoft Edge.

5. Hardware Interfaces
    a) The web app should be able to be accessed from computing devices including (but not limited to) modern smartphones, desktops, laptops, tablets, and other computing devices with internet connections and web browsers.
6. Software Interfaces
    a) Frontend software/services: HTML and/or ReactJS
    b) Backend software/services: Amazon AWS Cloud (EC2 instance), OpenAI/ChatGPT API (using Python programming language), other databases
7. External Interfaces
    a) GiftGPT uses APIs to communicate with external services. The following APIs are used: ChatGPT/OpenAI API.

I. System Requirement Analysis - The system/project's technical requirements which must be satisfied/developed

1. Web-based Application (Software Requirement/SR)
    a) Description: The application should be a web app that can be run on a browser website/webpage.
    b) Resource: ReactJS framework can be used for building the web app.
    c) Costs: $TBD + the development time required to implement the web app using ReactJS, or learning ReactJS.
2. Minimal Browser Access (SR)
    a) Description: The app should not require access to storage, cookies, or any other browser-related functionalities.
    b) Resource: Design the app in a way that does not rely on browser storage or cookies.
    c) Costs: None.
3. Integration with ChatGPT API
    a) Description: The app should seamlessly integrate with the ChatGPT API to generate responses.
    b) Resource: Utilize the ChatGPT API provided by OpenAI for generating responses.
    c) Costs: TBD. Possible service fees associated with using the ChatGPT API.
4. No Database Requirement
    a) Description: The app should not require any databases for its functioning.

b) Resource: Develop the app without the need for database integration.
c) Costs: None.

5. Responsive design
    a) Description: The app should be designed to be responsive and accessible across various devices and screen sizes.
    b) Resource: Responsive design frameworks or custom CSS can be utilized.
    c) Costs: TBD. Development/testing time is required to ensure responsiveness.
6. Compatibility with multiple browsers
    a) Description: The app should be compatible with popular web browsers such as (but not limited to) Chrome, Firefox, Safari, and Edge, ensuring consistent functionality and appearance across all browsers and devices.
    b) Resource: Compatibility testing and browser-specific code adjustments may be required.
    c) Costs: $TBD (close to zero). Time required for compatibility testing and development adjustments.
7. Scalability
    a) Description: The app should be designed to handle increased user traffic and scale as the user base grows.
    b) Resource: AWS EC2 can be utilized (already done)
    c) Costs: TBD. Potential costs associated with scaling infrastructure.
8. Privacy and data security
    a) Description: The app should prioritize privacy and data security, ensuring that user conversations and personal information are protected and not stored)
    b) Resource: Don't store any conversation data. ChatGPT/OpenAI Privacy Policy should be displayed on the page
    c) Costs: $Close to zero
9. Non-Monetization
    a) Description: The app should not be monetized
    b) Resource: Ensure the app does not incorporate any monetization elements.
    c) Costs: None.

J. User Requirement Analysis - This section contains user requirements that must be satisfied/developed. This section can also serve for User Acceptance Testing.

1. Simple User Interface
    a) Description: The app's user interface should be simple, featuring three text boxes and buttons for user interaction.
    b) Resource: Utilize HTML, CSS, and ReactJS components to design the user interface.
    c) Costs: None.
2. Clear User Instructions
    a) Description: The app should have clear and easily understandable instructions to guide users in utilizing its features.
    b) Resource: Incorporate user instructions within the app's interface.
    c) Costs: None.
3. Dyslexic Font Option
    a) Description: The app could include a dyslexic font option to cater to users with dyslexia.
    b) Resource: Provide a dyslexic font choice within the app's user interface.
    c) Costs: None.
4. ChatGPT Response Display
    a) Description: The app should display ChatGPT responses in a simple textbox at the bottom of the interface.
    b) Resource: Integrate the response display feature within the app's user interface.
    c) Costs: None.
5. User Feedback
    a) Description: The app should provide users with the ability to provide feedback via email, or an embedded Google form.
    b) Resource: Include an email feedback mechanism within the app. Incorporate an embedded Google Form within the app's website.
    c) Costs: None.

K. Optional System Requirement Analysis - This section contains the optional system technical requirements which may be developed in the future release.

1. Multiple Chat Themes
    a) Description: The app should provide an option for users to change how the app looks: colors, theme, etc
    b) Resource: None
    c) Costs: None. Time to learn and develop.
2. Copy button

    a) Description: The app should provide an option for users to copy the outputs from the app.
    b) Resource: None
    c) Costs: None. Time to learn and develop.
3. Conversation History Storage
    a) Description: The APP may implement cookies to store past conversations as an optional feature.
    b) Resource: Implement cookie functionality if desired for storing previous conversations.
    c) Costs: TBD. Development time and potential security considerations related to implementing cookies.
4. Clear conversation history
    a) Description: The app should provide an option for users to clear their conversation history if desired.
    b) Resource: UI components and data management functionality can be developed.
    c) Costs: TBD. Development time is required for implementing the conversation history-clearing feature.
5. Storing historic gift fulfillment and requests in a database.