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Chat Bot - PA0

Introduction to Software Engineering

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CHAPTER 1 : INTRODUCTION

1.1 Brief Introduction

This project aims to develop an AI chatbot application. The chatbot will serve both personal users and companies, offering valuable interactions for customer service and personal assistance. Its versatility makes it beneficial for a wide range of applications, from personal productivity to company support. The project is worthy because AI chatbots are increasingly demanded for their ability to provide fast, efficient responses and reduce workload on human agents.

1.2 Target user and Environment

The target users for this chatbot:

- Personal Users: Using an AI assistant for daily tasks, productivity, and communication.
- Company Users: Businesses aiming to enhance customer service can create and add new knowledge to their chatbot, integrating it effectively within the company.

The application is designed to be accessible across multiple platforms, including:

- Devices: Desktop and mobile devices.
- Operating Systems: Windows, macOS, iOS, Android.
- Web Access.
- Tools, languages: HTML, CSS, JavaScript.

1.3 Key features

• Authentication and Authorization

– Account registration with validation for username and password.

– Account activation and password recovery via email.

– Login with existing credentials or Google integration.

– Account logout.

• AI Chat

– Real-time chat with the AI chatbot using tokens.

– Option to switch AI Agents.

– Create new chat threads and view history.

– Open past chat threads from history.

• AI Bot Creation and Management

– Ability to create new AI bots, update, delete existing bots.

– Modify bot prompts and knowledge data.

– Interact with custom bots through a chat widget.

– Add or remove knowledge data, preview and chat with AI bots.

– Publish AI bots to platforms like Slack, Telegram, and Messenger.

• Knowledge Data Management

– Add and view knowledge datasets.

– Enable, disable, or delete data sources.

– Upload data from files, URLs, Google Drive, Slack, and Confluence.

• Prompt Management

– View and search public prompts by category.

– Mark prompts as favorites.

– Create and manage private prompts.

– Use prompts in the chat library and invoke them quickly with a slash (/) command.

• Account Upgrades and Monetization

– Account upgrade options with unlimited token access for Pro accounts.

– Display Pro account details.

– Enable ad integration for revenue generation.

• Image-Based Q&A

– Upload and chat using images.

– Capture and chat with images from the camera or screenshots.

• Email Composition with AI

– Dedicated tab for AI-assisted email composition.

– AI actions for generating draft emails (e.g., Thank You, Apology, Follow-Up).

CHAPTER 2: DETAIL USE CASE

2.1 Authentication and Authorization

2.1.1 Register an account

Use Case	Register an account
Goal	Register new account
Pre-conditions	User do not have an account
Main flow	1. The user opens the account registration page. 2. User enters username, password, and other information (email, phone number, etc.). 3. System checks that binding. 4. The system sends an account activation email to the registered email address. 5. User confirms email to activate account.
Alternative Flow	3a. Username Already Exists: 1. The system notifies: "The username has already been taken." 2. The user is asked to choose and provide a different username and try again. 3b. Password Does Not Meet Security Requirements: 1. The system indicates which requirements the password fails to meet (e.g., length, digits, special characters, etc.). 2. The user is asked to modify the password and retry. 3c. Password and Confirm Password Do Not Match: 1. The system notifies: "Passwords do not match." 2. The user is asked to re-enter the password in the "Confirm Password" field to proceed. 4a. Activation Email Sending Error: 1. The system notifies that there was an issue sending the email. 2. The system suggests the user try again later or contact support. 4b. Email Confirmation Took Too Long, Exceeding the Specified Time Limit: 1. The system notifies that the activation email has expired. 2. The user can request a new activation email. 5a. User Did Not Confirm Email Within the Specified Timeframe: 1. The account is not activated.

	2. The user can request a new activation email or create a new account.
Result	The new user account is added to the database.
Special requirements	- Require password strength with the following criteria: minimum length of 8 characters, including uppercase letters, lowercase letters, numbers and special characters. - Processing time for registration and account activation via email is no more than 5 seconds. - The time to send the account activation email does not exceed 30 seconds (from the time the user requests to the time the email is received).

Table 1. Register an account

2.1.2 Login

Use case	Login
Goal	Login to the system
Pre-conditions	User already has an account
Main Flow	1. User opens the login page. 2. User enters login name and password. 3. The system checks login information. 4. If compatible, the system logs in the user and allows use of the application.
Alternative Flow	3a. User Enters Incorrect Information: 1. The system notifies: "Incorrect password/username." 2. The user is prompted to re-enter the information and try again. 4a. System Encounters a Technical Issue (overload, etc.): 1. The system displays: "System error, unable to process request." 2. The system suggests that the user try again later.
Result	The user has access to the system
Special Requirements	- Login processing time should not exceed 5 seconds. - The system can handle ~1000 users logging in simultaneously. - Specific error message when entering incorrect login information. - Fast response time (real-time) to avoid waiting time. - There is a "remember login" function for users on personal devices.

Table 2. Login

2.1.3 Login with Google account

Use case	Login by google account
Actor	User
Goal	Login to the system via Google account
Main Flow	1. User presses the “Sign in with Google” button. 2. The system redirects to the Google login interface. 3. User selects a Google account and confirms. 4. The system creates a new account / links to the user's existing Google account.
Alternative Flow	4a. Invalid or disabled Google account: 1. Error reporting system. 2. Require users to choose another Google account or register via traditional methods.
Result	The user successfully logs into the system via Google account.
Special Requirements	- Login processing time should not exceed 5 seconds. - The system can handle ~1000 users logging in simultaneously. - Specific error message when entering incorrect login information. - Fast response time (real-time) to avoid waiting time. - There is a "remember login" function for users on personal devices.

Table 3. Login with Google

2.1.4 Recover Password

User case	Recover Password
Actor	User
Goals	Retrieve forgotten account
Pre-conditions	User had account in database
Main Flow	1. User selects “Forgot password”. 2. User enters registered account name. 3. The system sends an email with a link to reset the password via the email associated with the account. 4. The user accesses the link and enters a new password. 5. The user re-enters the new password and selects the update password.

Alternative Flows	2a. Account does not exist in the system: 1. The system announces "This account does not exist in the system". 2. Users can check the information again or register a new account. 3a. The time to send the password reset email is too long, beyond the specified time: 1. Notification of email expiration date. 2. Users can request to resend a new activation email. 4a. Password does not meet security requirements: 1. The system notifies that the password does not meet any requirements (length, numbers, special characters, ...). 2. Ask the user to change the password and try again. 5a. Password and re-entered password do not match: 1. The system notifies "Password does not match". 2. Ask the user to re-enter the "Re-enter password" section correctly and continue.
Result	The user account password is successfully changed and updated in the database.
Special Requirements	- The time to send a password reset email must not exceed 30 seconds (from the time the user requests to the time the email is received).

Table 4. Recover Password

2.1.5 Log out

Use case	Log Out
Actor	User
Goals	Log out of the system
Main Flow	1. User selects “Log out”. 2. The system logs out the user, ending the login session.
Alternative Flow	2a. System error when logging out: 1. The system does not log out (due to other activities being performed, network transmission error, etc.). 2. The system reports an error and asks the user to try again.
Result	The user returns to the login page.

Table 5. Log Out

2.2 Chat with AI Agents

2.2.1 Chat with AI Agents

Use Case	Chat with AI Agent
Brief - description	User chat with AI bot through ui interface, using their token
Pre-condition	- User has signed up, logged in, and selected or created a chat thread. - User has selected an AI agent for the chat. - User has sufficient tokens for interaction.
Main Flow	**1 User enters chat input** - User types a message or query in the chat input box. - **System Response**: The system checks the user's account for available tokens. 2 **Token verification** • **If Tokens are Sufficient**: o The system sends the input to the selected AI agent, retrieves a response, and displays it in the chat window. o The system deducts the required tokens from the user's account. • **If Tokens are Insufficient**: o The system does not proceed with processing the input. o **System Response**: A notification appears indicating insufficient tokens and options for purchasing additional tokens.
Special Requirement	**Response Time**: The system must respond to user messages within 1 second

Table 6. Chat with AI Agent

2.2.2 Create New Thread Chat

Use case	Create New Thread Chat
Brief - description	User create new thread chat
Actor	User
Precondition	- User has signed up and logged into the website. - User has navigated to the chat feature on the platform.
Main Flow	1. **User selects the option to create a new chat thread** - User clicks on "Create New Chat Thread" - **System Response**: The system initializes a new chat thread and prepares it for interaction. 2. **User selects an AI agent for the new thread** - User chooses an AI agent for the new chat thread from the list of available agents. - **System Response**: The system assigns the chosen AI agent to the new thread and prepares the chat interface for user interaction. 3. **User begins chatting in the new thread** - This initiates a transition to **Use Case : Chat with AI Agent**
Alternative Flows	1a. User Cancels Creation of New Chat Thread: 1. clicks on "Cancel" during any step in the chat thread creation process. 2. The system stops the creation process, discards any unsaved data for the new thread, and redirects the user to the previous screen or chat list. 2a. User Does Not Select an AI Agent: 1. The system displays a message prompting the user to choose an AI agent before continuing. 2. If the user continues not to select → system choose default AI Agent (first AI of list).

Table 7. Create New Thread Chat

2.2.3 History Browsing

Use Case	History Browsing
Brief - description	User search for existing chat, access the chat history feature
Actor	User
Pre-condition	- User has logged into their account on the website. - User has previously created one or more chat threads.
Main Flow	**1 User accesses the chat history feature** • User clicks on "Chat History" to view past chat threads. • **System Response**: The system retrieves a list of previous chat threads, showing the date, and brief details of each chat session. **2 User selects a chat thread to view** • User clicks on a specific chat thread from the history list. • **System Response**: The system opens the selected chat thread, displaying the full conversation history for review. **3 User decides to continue or close the thread** • **If the user decides to continue**: ◦ The system transitions to **Use Case : Chat with AI Agent** for resuming the chat. • **If the user decides to close**: ◦ The system returns to the history browsing interface.
Alternative Flows	1a. System Fails to Retrieve Chat History: 1. The system displays an error message: "Unable to load chat history. Please try again later." 2a. No Previous Chat Threads Exist: 1. The system displays a message: "No previous chat threads available" and provides a link to create a new chat thread.

Table 8. History Browsing

2.3 Create and manage AI BOT:

2.3.1 Create AI BOT:

Use case	Create AI BOT
Brief - Descriptions	This feature begins when the user wants to create a new AI BOT.
Main Flow	1. User chooses to create a new AI BOT. 2. System asks user to select a model for the chatbot (ChatGPT, Gemini, Copilot) 3. User selects a model. 4. User can optionally name the bot (default name: "{Model}_{ordinal}". 5. User can optionally insert knowledge data. 6. System creates an AI BOT based on that model.
Alternative Flow	4a. Bot's name already existed: 1. If it's the default name, increase the ordinal by 1 and create the bot. 2. If it's the name that the user added, displays an error message and asks the user to change the name. 6a. System cannot create AI BOT: 1. System displays a "fail" message. 2. System returns to the create menu.
Pre-conditions	User has to sign in first before creating an AI BOT.
Special Requirements	- Simple and minimal UI. - System moves to the new bot's chat UI after the user created the bot.

Table 9. Create AI BOT

2.3.2 Display/Find AI BOT:

Use case	Display/Find AI BOT
Brief - Descriptions	This feature begins when the user wants to find an AI BOT.
Main Flow	1. User hits the slide drawer icon. 2. System opens a new menu that displays a search bar and all the bots that the user has created. 3. User enters the information of the bot (name, model) in the search bar. 4. System finds the bots that have similar information. 5. System displays all the bots found.
Alternative Flow	2a. User hasn't created any bots: 1. System displays a "create" symbol that leads to the create feature. 2b. Too many bots to appear on the menu.: 1. System displays a limited number of bots with the "…" symbol at the end. 4a. System cannot find any bot that satisfies the information: 1. System displays a message to indicate no bot was found.
Pre-conditions	User has to sign in first.
Special Requirements	Minimal UI. The bots list should only contain the bots's icons and names.

Table 10. Display/ Find AI BOT

2.3.3 Update/Delete AI BOT:

Use case	Update/Delete AI BOT
Brief - Descriptions	This feature begins when the user wants to update or delete an AI BOT.
Main Flow	1. User right clicks on the bot. 2. System asks if the user wants to update or delete the bot. 3. User chooses delete: 1. System asks for the user's confirmation. 2. System deletes the bot's information and data. 3. System displays a message that the bot has been deleted. 4. User chooses update: 1. System moves to the update menu. 2. User changes the bot's information (name, knowledge data, etc). 3. User hits save. 4. System saves the bot's new information.
Alternative Flow	3a. System cannot delete the bot: 1. System displays a message to user. 4a. Bot's new name already existed: 1. System displays a message. 2. System asks the user to enter a different name. 4b. System cannot save the bot's information: 1. System displays a message.
Pre-conditions	- User has to sign in first. - The bot needs to exist before being updated or deleted.
Special Requirements	System shall delete data thoroughly to protect the user's information.

Table 11. Update/Delete AI BOT

2.3.4 Update prompt for AI BOT:

Use case	Update prompt for AI BOT
Brief - Descriptions	The feature begins when user updates the prompt for an AI bot to refine its responses and behavior.
Main Flow	1. User hits the “change prompt” icon on the current prompt. 2. User can then edit the current prompt or completely rewrite it. 3. User confirms the change. 4. System replaces the old prompt and answer with the updated one.
Alternative Flow	4a. System cannot replace new prompt: 1. System displays a message. 2. System returns old prompt and answer.
Pre-conditions	Only the newest prompt can be updated.
Special Requirements	Allows users to view the old prompt and answer after updating them.

Table 12. Update prompt for AI BOT

2.3.5 Communicate with created AI BOT through Chat widget:

Use case	Communicate with created AI BOT through Chat widget
Brief - Descriptions	This feature begins when the user interacts with the chat bot through a chat widget.
Main Flow	1. User initiates a chat with the bot by clicking on the chat widget. 2. User types a query or message into the text area. 3. User hits send. 4. The bot processes the input and generates a response, which is displayed to the user on the widget.

Alternative Flow	1a. Chat widget fails to open: System displays a message to inform the user. 4a. The bot cannot respond to query: 1. System displays a message to inform the user. 2. System asks the user if they want to add knowledge data relating to that topic.
Pre-conditions	A functional chat widget integrated into the website or application.
Special Requirements	- The chat widget should be user-friendly and visually appealing. - The widget shall be able to redirect user to the main website or application if necessary.

Table 13. Communicate with created AI BOT through Chat widget

2.3.6 Add/Remove knowledge data:

Use case	Add/Remove knowledge data
Brief - Descriptions	This feature begins when user adds knowledge data into the AI BOT or removes a knowledge data that the bot already learned.
Main Flow	1. User right chooses to update the bot. 2. System moves to the update menu for the current bot. 3. User chooses the option to add/remove knowledge data. 4. System displays a list of available knowledge data. If the bot currently doesn't have a specific knowledge, displays "add" next to the knowledge data's name. Otherwise, it displays "remove". 5. User chooses "add" to add a new knowledge data or "remove" to remove an already learned knowledge data. 6. User confirms their options. 7. System inserts data into or removes data from the bot accordingly.
Alternative Flow	7a. System cannot insert or remove data: 1. System displays a message.
Pre-conditions	The knowledge data has to exist in the system before adding it into the bot.
Special Requirements	System displays the name, source and status("add" / "remove") of a knowledge data in the knowledge data list.

Table 14. Add/ Remove knowledge data

2.3.7 Preview and Chat with AI BOT:

Use case	Preview and Chat with AI BOT
Brief - Descriptions	This feature shows preview when the user chats with AI BOT.
Main Flow	1. User initiates a chat session with AI BOT by entering a query in the text area. 2. User submits the query by hitting ENTER on their keyboard or the send icon on the UI. 3. The bot processes the input and generates a response, which is displayed to the user.
Alternative Flow	3a. The bot cannot respond to query: 1. System displays a message to inform the user. 2. System asks the user if they want to add knowledge data relating to that topic.
Pre-conditions	The bot needs to exist.
Special Requirements	System can display some recommended questions that are related to the current topic. User can click on these questions to ask the bot.

Table 15. Preview and Chat with AI BOT:

2.3.8 Publish AI Chat to Slack, Telegram, Messenger:

Use case	Publish AI Chat to Slack, Telegram, Messenger
Brief - Descriptions	This feature begins when user wants to publish an AI Chat log to platforms like Slack, Telegram, Messenger.
Main Flow	1. User chooses to share the conversation with the current bot. 2. System displays options to share to other platforms. 3. User selects a platform. 4. System asks the user to choose specific recipients. 5. System transforms the logged chat into a suitable format for the selected platform. 6. System sends the logged chat to the platform.
Alternative Flow	5a. System cannot format chat correctly: 1. System displays a message to inform the user. 6a. System cannot send the logged chat: 1. System displays a message to inform the user.
Pre-conditions	- API keys for the desired messaging platforms. - User needs to have an account of the platform.
Special Requirements	- System shall be able to handle large chat logs. - System shall be able to handle different formatting and messaging protocols for different platforms. - System should limit the amount of messages sent if the chat data is too large.

Table 16. Publish AI Chat to Slack, Telegram, Messenger:

2.4 Knowledge Data Management

2.4.1 Manage Data

Use case	Manage Data Knowledge
Brief - descriptions	This functionality allows users to add, display, and manage data knowledge, including loading data from various sources such as files, URLs, Google Drive, Slack, and Confluence.
Actor	User already has an account
Goal	Gather and organize information, Improve AI model training capabilities
Pre-conditions	User must log in to the system
Main Flow	1.The system asks the user to select the function to create a knowledge dataset. 2. User selects data source to load (file, website URL, Google Drive, Slack, Confluence). 3. The user provides information and access if required (e.g. URL or login account). 4. The system performs the data loading process from the selected source. 5. The system stores the data and notifies the user of completion.
Alternative Flow	3a. Invalid or unavailable data source 1. The system notifies the user of errors. 2. The system suggests the user to check the information again or choose another source. 4a. Access denied when loading data from external sources (Google Drive, Slack, Confluence) 1. The notification system requires access. 2. The system prompts the user to grant permission or provide login information again.
Result	Organized and standardized knowledge datasets

Table 17. Manage Data

2.4.2 Disable/delete data

Use case	Disable/ delete data
Brief - descriptions	This function allows the user to disable or remove a data source from the system's knowledge base when the data source is no longer needed or is invalid.
Pre-conditions	User must log in to the system
Main Flow	1.The system displays a list of data sources currently available in the knowledge base. 2. The user selects the data source they want to disable or delete. 3. The user selects the Disable or Delete option for the data source. 4. The system asks for confirmation of the action (especially with the delete option). 5. User confirms the operation. 6. The system performs the deactivation or deletion of the data source and updates the state of the knowledge set.
Alternative Flow	3a. User selected data source that does not exist or is invalid 1. The system displays an error message and asks the user to select again. 5a. User cancels operation during confirmation 1. Hệ thống dừng quy trình và không có thay đổi nào được thực hiện. 6a. Delete data source failed (due to system or connection error) 1. The system displays an error message and asks the user to try again later.
result	data resource is deleted.

Table 18. Disable/ Delete Data

2.5 Prompt Management

2.5.1 Display and find public prompt

Use case	Display and find public prompt
Brief - Descriptions	The system displays public prompt and allows user can see history, find public prompt.
Main flow	1. Users write the prompt 2. The system displays existing prompt and history prompt 3. The user can swipe up and down to find public prompt
Alternative flows	2a. The system cannot display 1. The system displays an error massage. 2. The system request user reloads.
Pre-conditions	The user must access the AI chat bot.
Special Requirements	The interface is convenient and user-friendly.

Table 19. Display and find public prompt

2.5.2 Filter prompts by category

Use case	Filter prompts by category
Brief - Descriptions	The system divide prompt by topic or other…
Main flow	1. The system identifies category of the prompt 2. Then the system moves them into target folder.
Alternative flows	1a. The system cannot identify 1. The system creates a folder to contain it. 2. The system moves them into this folder.
Pre-conditions	The user must write prompt with chat bot.
Special Requirements	The system displays folders on the left screen.

Table 20. Filter prompts by category

2.5.3 Insert prompt to favourite and watch list of favourite

Use case	Insert prompt to favourite and watch list of favourite
Brief - Descriptions	The system has a list of favourite and allows user to watch it.
Main flow	1. The system has a list to save favourite. 2. The system inserts prompt what user wants to save into list.
Alternative flows	2a. The system cannot insert 1. The system displays error messages. 2. The system retries insert again.
Pre-conditions	The user must chat with chatbot history.
Special Requirements	The list is placed in a visible place.

Table 21. Use case Insert prompt to favourite and watch list of favourite

2.5.4 Create a private prompt

Use case	Create a private prompt
Brief - Descriptions	The user can create a private prompt
Main flow	1. The user chooses private mode. 2. The system can change color in search bar to announcement with user
Alternative flows	2a. The system cannot change to private prompt 1. The system displays error messages. 2. The system tries again.
Pre-conditions	The user has access to the chatbot web.
Special Requirements	The button to change private prompt is visible.

Table 22. Create a private prompt

2.5.5 Show and find private prompt

Use case	Show and find private prompt
Brief - Descriptions	The system shows and allows users to find private prompt
Main flow	1. Users write the prompt 2. The system displays existing prompt and history prompt 3. The user can swipe up and down to find public prompt
Alternative flows	2a. The system cannot display 1. The system displays an error massage. 2. The system requests user reloads.
Pre-conditions	The user must access the AI chat bot.
Special Requirements	The interface is convenient and user-friendly.

Table 23. Show and find private prompt

2.5.6 Update and delete private prompt

Use case	Update and delete private prompt
Brief - Descriptions	- The system updates when user interacts with chat bot - The user can delete the private prompt.
Main flow	1. When a user creates a new prompt, the system updates this prompt into history. 2. The system displays history on screen. 3. When users click delete, the system removes this prompt from history. 4. Return to step 2.
Alternative flows	2a. The system cannot update 1. The system displays error messages. 2. The system tries again.
Pre-conditions	The user chats with a Chat bot.
Special Requirements	The interface is convenient and user-friendly.

Table 24. Update and delete private prompt

2.5.7 Using prompt in library

Use case	Using prompt in library
Description	Input prompt into library retrieve appropriate responses, and manage the flow of conversation based on the prompts provided by the user
Main flow	1. The user inputs the prompt 2. The system processes the prompt and generates a train model. 3. The system displays on screen.
Alternative flows	2a. The system cannot load a prompt in the library. 1. The system displays error messages. 2. The system is going to be tried again. 3a. The system cannot display on screen 1. The system displays error messages. 2. The system is going to be tries again.
Pre-conditions	The library system installed.
Special Requirements	Performance: time upload < 15s

Table 25. Using prompt in library

2.5.8 Use quickly prompt in Chat with slash

Use case	Use quickly prompt in Chat with slash (/)
Description	The user can use slash to access quickly into command.
Main flow	1. The user writes slash (/) 2. The system displays all command entries. 3. The user chooses the command entry if the user wants.
Alternative flows	3a. The user writes unknown command 1. The system displays error messages. 2. The system request user tries again.
Pre-conditions	The user writes prompt with slash (/)
Special Requirements	The command entry is named in an easy to understand .

Table 26. Use quickly prompt in Chat with slash

2.6 Account Management

2.6.1 Upgrade Account to Pro

Use Case	Upgrade Account to Pro
Brief Descriptions	The user intends to upgrade their account to Pro, gaining benefits such as unlimited tokens and an ad-free experience.
Actor	User, Bank, e-Wallet, ADMIN System
Main flow	1. User selects the option to upgrade the account. 2. System displays the benefits, fees, duration of validity, terms, and commitments related to the Pro account. 3. User confirms the upgrade to Pro. 4. System presents the payment interface. 5. User completes the payment, choosing a preferred payment method (Bank or e-Wallet). 6. System verifies the transaction's success in real-time. 7. System updates the account to Pro, enabling Pro features such as unlimited tokens and an ad-free experience.
Alternative flow	3a. User chooses not to confirm the upgrade to Pro: 1. The system returns to the main interface, maintaining the current account status. 6a. Transaction failure: 1. System displays the message: "Transaction failed. Please check your payment transaction.". 2. The System checks with the Bank or e-Wallet to determine the reason for the transaction failure. 3. System notifies the User of the reason for the failure. 4. Troubleshooting: + If the transaction issue is resolved, proceed to step 6. + If the transaction issue persists, inform the user to await further resolution.
Result	The account is upgraded to Pro, and the user experiences the agreed-upon benefits.
Special Requirement	Real-time quality: Transaction confirmation between the System and Bank or e-Wallet should occur in real-time to ensure immediate response and processing.

Table 27. Upgrade Account to Pro

2.6.2 Monetization

Use Case	Monetization
Brief Descriptions	The system displays advertisements to free users and earns revenue from third-party advertisers.
Actor	User, ADMIN System.
Main flow	1. System displays an advertisement to free users after a specified period or following a certain number of chat interactions, requiring the user to view the ad. 2. After an agreed-upon viewing duration (as per the advertisement agreement), the System displays a "Next" button. 3. User clicks "Next" to continue using the service. 4. System receives revenue from third-party advertisers based on ad views.
Alternative flow	2a. User watches the entire ad: 1. The System closes the advertisement. 2. The System returns to the previous user interface.
Result	The User experiences the advertisement, and the System earns revenue based on views tracked by the third-party advertisers.
Special Requirement	- Video Quality: Ensures smooth and clear playback of video ads. - Advertisement Quality: Maintains engagement standards to enhance user experience and meet third-party expectations.

Table 28. Monetization

2.7 Photo Chating

2.7.1 Update picture to chat, Chat with screenshot

Use case	Update picture to chat, Chat with screenshot
Actor	User
Goal	Upload photos and chat about photo content
Pre-conditions	User has logged into their account
Main Flow	1. User selects the "Upload photo" function. 2. User selects a photo from the device (available photo / photo just taken screenshot) and uploads it to the chat box in the system. 3. The system processes the photo, using AI to analyze the content in the photo. 4. User enters a question about the photo content. 5. The system answers the question based on the analyzed photo content and searches for information on the internet.
Alternative Flow	2a. Invalid or unsupported photo: 1. The system reports the error "Invalid image" or "Image format not supported". 2. User can select another photo and try again. 2b. Image loading error: 1. The system crashes when the user uploads images and is interrupted (internet, overload, ...). 2. The system reports an error and asks the user to try again. 3a. Users just upload photos and don't ask any questions: 1. The system will process and load all content into the learning data set. Then give an overview/summary of the photo's content. 2. The user can continue to ask about that content and the system will continue the response flow → proceed to main flow 4. 3b. The user just uploaded the photo and asked a question: → Proceed to main flow 4.
Result	Users receive answers related to the photo content.

Table 29. Update picture to chat, Chat with screenshot

2.7.2 Take picture and chat with taken picture

Use Case	Take picture and chat with taken picture
Actor	User
Goal	Take photos directly and get answers to questions about the photos you just took.
Pre-conditions	User is logged in
Main Flow	1. The user selects the "Take photo" function. 2. The system requests permission to use the device's camera and allows the user to take photos. 3. User takes a photo and sends it to the system. 4. Image content processing and analysis system. 5. The user enters a question related to the photo taken. 6. The system answers questions based on analyzed image content and searches for information on the internet.
Alternative Flow	2a. Users do not agree to access and use the camera: 1. The system closes the photo capture window. 2. Return to the chat home page interface. 2b. User allows access: 1. Switch the interface to the user device's photography application. 2. After taking the photo, the photo will automatically be transferred to the chat frame. 3. The user clicks send to send the photo to the system. 2c.Devices that do not support camera photography: 1. The system reports an error that the camera cannot be found. 2. Return to the chat home page interface. 3a. Users just upload photos and don't ask any questions: 1. The system will process and load all content into the learning data set. Then give an overview/summary of the photo's content. 2. The user can continue to ask about that content and the system will continue the response flow → proceed to main flow 5. 3b. The user just uploaded the photo and asked a question: → Proceed to main flow 4.
Result	Users receive answers related to the content of the photo just taken.

Table 30. Take picture and chat with taken picture

2.7.3 Special Requirement of 2.7:

- **Performance**:
  - The processing time for images and response should not exceed 5 seconds, even for large files.
  - Image uploads are limited to a maximum of 10MB to prevent system overload.
- **Security**:
  - The system must ensure user privacy by not storing images without consent.
  - Images and related data should be automatically deleted after the chat session, unless users request otherwise.
- **Scalability**:
  - The system should handle simultaneous image analysis requests from multiple users without performance degradation.
  - The architecture must support easy updates to AI models to enhance image recognition and analysis.
- **Analysis Quality**:
  - Ensure AI achieves high accuracy in analyzing images, understanding details and context for precise answers.
  - The system must recognize various objects (text, people, animals, objects) and interpret complex contexts.
- **User Experience**:
  - Provide a smooth, user-friendly interface for image uploads and camera functions.
  - Detailed error messages should guide users when unsupported images or processing issues arise.
  - Support popular image formats like JPEG and PNG, and allow screenshots or camera photos.
- **Availability and Responsiveness**:
  - Ensure uninterrupted system operation with a minimum uptime of 99.5%.
  - The system should quickly respond to errors and include fast recovery mechanisms when issues occur.

2.8 Email with AI Agents

Use Case	Draft Email with AI Assistance
Actor	User
Precondition	- Users has logged into their account on the website. - The user has selected the email tab designated for drafting emails.
Main Flow	**1. User navigates to the email drafting tab** • User clicks on the "Email" tab dedicated to drafting emails. • **System Response**: The system opens a new tab specifically for email drafting and displays available AI-powered email drafting actions. **2.User selects an AI drafting action** • User reviews the list of AI drafting actions (e.g., Thanks, Sorry, Yes, No, Follow-Up, Request for more information) and selects one to create an email draft. • **System Response**: The system uses AI to generate a draft email based on the selected action. **3.System generates and displays draft email** • The AI generates an email draft according to the selected tone and purpose. • **System Response**: The draft email is displayed within the drafting tab for the user to review. **4.User reviews and modifies the draft if necessary** • User reads the generated draft and makes any necessary edits to personalize it further. • **System Response**: The system saves changes made by the user, ensuring the draft reflects their final modifications. **5.User saves or sends the email** • **If the user chooses to save**: o The system stores the draft in the user's account for future access. • **If the user chooses to send**: o The system confirms that the email is ready for sending and proceeds with the sending process.
Alternative Flows	2a. AI Draft Generation Fails**:** fails to generate an email draft due to a system error or technical issue. 1. user selects an AI drafting action, but the system encounters an error. 2. system displays an error message: "Unable to generate draft at this time. Please try again later." 3a. User Cancels Email Drafting:

	1. system discards the current draft and returns the user to the main email dashboard or previous screen.
Special Requirement	**- Security**:The system must securely handle and encrypt email content to protect user privacy. **- Performance**:Draft generation should not exceed 2 seconds to provide a responsive experience. Any edits made by the user should be saved in real-time to prevent data loss. **- User Experience**:Provide an intuitive, clear interface, with easy-to-navigate options for selecting AI actions and editing drafts. **- Scalability**: The system should support multiple users simultaneously generating and editing drafts without lag or downtime.

Table 31. Draft Email with AI Assistance

GOOGLE DOCS

Sprint planning meeting: Planning Meeting PA0.

Sprint review meeting: Review Meeting PA0.

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