**Software Requirements Specification (SRS) Document v2**

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| ***Project number*** | Team 49[[1]](#footnote-2) |
| ***Project Title*** | Parent Diaries |
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# Brief problem statement

The problem that we are trying to solve is confusion, lack of clarity and of experience that new parents face, by helping them log the journey of their child and incorporate a conversational speech-to-speech platform using AI which can advise them on how to parent their child. This app intends to help parents make better decisions for the future of their child and aid their child's better upbringing. It also aims to reduce stress and confusion that parents have. The app also focuses on overall mental and physical development and well-being of children.

First time parents lack experience and are usually confused on how to parent their child. They have to rely on conventional sources like other parents around them, or parenting books. These sources might not match with the specific problems they are facing and can be of limited help with limited context

# System requirements

The system requirements for our solution are as follows:

1. A Trello Board has been created for task management.
2. V S Code is the primary editor which we shall be using.
3. MERN stack-based web-app
   1. MongoDB
   2. Express.js

c. React Native Node.js

* 1. Associated Tools:
     1. Typescript
     2. Figma
     3. ESLint
     4. Postman
     5. JWT

1. GEN AI technologies (including for Automatic speech-to-text):
   1. LangChain: Whisper
   2. GPT 4o
   3. Hugging Face
2. Deployment:
   1. StreamLit
   2. ExpoGo
   3. Docker
   4. AWS

# Users profile

***Primary Target Audience:*** Parents of toddlers (0-5 yrs)

***Mode of usage:*** *Mobile App*

***Technical Literacy (familiarity with software):*** *Moderate*

Parents of toddlers who are confused or need better parenting advice for the greater overall development of their child. Parents who want to solicit genuine opinion to nurture their child or to log important milestones and developmental phases of children to keep a track of their overall development.

# Feature requirements (described using use cases)

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| No. | Use Case Name | Description | Release |
| 1 | User Registration | Enables a new user to create an account by providing required details (e.g., email, password, and basic profile information). The system validates the information and sends a verification email to complete the registration. | R1 |
| 2 | User Login | Allows a registered user to log in securely by entering their credentials. The system verifies the provided details and grants access to the personalized dashboard upon successful authentication. | R1 |
| 3 | Speech-to-Speech Interaction | Enables a registered user to interact with the system via voice. The system captures the user's spoken input, converts it to text using speech recognition, processes the text with a large language model (LLM), and then converts the LLM’s response back into speech—all in the language chosen by the user. | R1 |
| 4 | Text-to-speech interaction | Enables a registered user to interact with the system via a mixture of text and voice. The system captures the user's text input, processes the text with a large language model (LLM), and then converts the LLM’s response back into speech—all in the language chosen by the user. | R1 |
| 5 | Text-to-text interaction | Enables a registered user to interact with the system via a mixture of text and voice. The system captures the user's text input, processes the text with a large language model (LLM)—all in the language chosen by the user. | R1 |
| 6 | Speech-to-text interaction | Enables a registered user to interact with the system via voice. The system captures the user's spoken input, converts it to text using speech recognition, processes the text with a large language model (LLM)—all in the language chosen by the user. | R1 |
| 7 | Session History and Insights | Allows user to view their past interactions through saved session logs. This allows users to keep a track record of the overall development of child better. | R1 |
| 8 | Feedback Mechanism | Enables users to rate their experience and submit feedback about the system’s interactions. The collected feedback supports continuous improvement of the AI and overall user experience. The users can report a problem within the application if they encounter any such issue. | R1 |
| 9 | Dark Mode and UI Customization | Allows users to customize the application’s appearance by selecting themes (such as dark mode). These preferences are saved in the user profile to ensure a personalized and consistent experience across sessions. | R2 |
| 10 | Account Management | This use case describes how a logged-in user manages their account information within the AI-based parenting mobile application. In addition to updating user profile details, the  process emphasizes data integrity, privacy, and user control over sensitive information. | R1 |
| 11 | User Privacy and Data Control | This use case deals with how the user can manage the processing of their personal data according to their own consent. The user can overview authentication, session security and child protection settings. | R2 |
| 12 | Vaccination Charting and Scheduling | The system keeps track of the schedule of vaccine doses to be administered to user’s child and comes up with relevant recommendations regarding the vaccination programs | R1 |
| 13 | Contact Paediatrician | The system helps user interact with paediatrician to monitor the progress of child more effectively and helping the parent solicit better parenting advice. | R2 |
| 14 | Milestone Tracking | The system helps parents log important milestones and phases in the development of their child right from the child uttering his/her first word to taking the first steps. | R2 |
| 15 | Physical Growth Tracker | Tracking height, weight and head circumference over time and comparing it with typical developmental ranges to provide a reference point. | R2 |
| 16 | User Subscription | Allows the user to view the current subscription plan along with other details. | R2 |
| 17 | Community Support: Contacting with Other Parents | This use case enables the user to interact with other users of the app so that they can discuss the well-being of their children and seek each other’s valuable advice. | R2 |
| 18  19 | Notification System and Settings  Child Management by contacting with other parents | The system sends notifications to the user regarding any major actions taken by the user or any other significant changes pertaining to user account or application.  Allows parents to add, view, update, and remove their children's profiles within the Parent Diaries app. | R2  R2 |

# Use case diagram

Diagram of a diagram of a person

AI-generated content may be incorrect.

# Use case description

#### UC-1

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| **Use Case Number:** | UC-01 |
| **Use Case Name:** | User registration |
| **Overview:** | Enables a new user to create an account by providing required details (e.g., email, password, and basic profile information). The system validates the information and sends a verification email to complete the registration. |
| **Actors:** | User, Email service Provider, Google account login |
| **Precondition:** | * The system is up and running. * The user reaches the landing page or the registration page in the webapp. |
| **Flow:** | Main (success) Flow:   1. The user inputs required information (name, email, password, date of birth, etc.). 2. The user reviews and accepts the privacy policy and consent forms for data usage and mental health support. 3. The user submits the data entered, which is then sent to our system. 4. The system checks if the email or username already exists. 5. The system validates that mandatory fields are filled and comply with format requirements (valid email format, strong password). 6. The system creates a new account in the database. 7. The system sends a verification email or code to the user using our email service provider 8. The user enters the validation code from the verification message to verify themselves. 9. Registration Complete: The system displays a success message and redirects the user to the login page. |
|  | Alternate Flow:  \*a) System crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) Signup with Google Option   1. The user selects the “Signup with Google” option on the registration page, prompting the system to redirect them to Google's authentication service. 2. The user enters valid Google account credentials, and upon successful authentication, Google returns an authentication token. 3. The system verifies the token, imports available profile information from Google, and creates a new account using this data.   Postcondition:  A new account is created and verified via Google authentication.  4a) Duplicate Username   1. The user’s chosen username is already registered. 2. The system displays an error message indicating that the username is already in use and prompts the user to enter a different username. 3. The process then returns to the step where the user inputs their registration details.   Postcondition:  Registration is not completed until a unique username is provided.  5a) Mandatory Fields Missing or Invalid Data   1. Mandatory fields are missing, or the provided data fails format checks (e.g., an invalid email format). 2. The system highlights the invalid fields and provides specific instructions for correcting the errors. 3. The user updates the information accordingly and resubmits the registration data.   Postcondition:  Registration remains incomplete until all mandatory fields are correctly filled with valid data. |
| **Post**  **Condition:** | A new user account is successfully created and verified. The user can now log in to the AI-based mental health application and access personalized support, mood tracking, and other therapeutic features under secure and privacy-compliant conditions. |

#### UC-2

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| **Use Case Number:** | UC-02 |
| **Use Case Name:** | User Login |
| **Overview:** | Allows a registered user to log in securely by entering their credentials. The system verifies the provided details and grants access to the personalized dashboard upon successful authentication. |
| **Actors:** | User, Google Account Login |
| **Precondition:** | * The system is online and capable of processing authentication requests. * The user has an existing account in the system. * The user is on the login route |
| **Flow:** | Main (success) Flow:   1. The user enters a valid username and password. 2. The user clicks the "Login" button. 3. The system checks the credentials provided against the stored user database. 4. If the credentials match, the system creates a session for the user. 5. The system redirects the user to the home page, indicating a successful login. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation   1a) Login with Google   1. The user selects the "Login with Google" option. 2. The system redirects the user to the Google authentication page. 3. The user enters their valid Google account credentials on the Google sign-in interface. 4. Google authenticates the credentials and returns a valid authentication token to the system. 5. The system validates the token, creates a session, and optionally links the Google account to an existing local profile if applicable. 6. The system logs the usage of this alternative authentication method for auditing purposes.   1a\*a) Google authentication System Unavailable   1. The authentication service is temporarily offline. 2. The system displays a dedicated error notification to the user indicating that the authentication service is currently unavailable. 3. The error notification provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting.   Postconditions:   * No session is created, and the user remains logged out until he uses the main flow, or the authentication service is restored to normal operation.   Postconditions:   * A secure user session is established using Google account authentication. * The user gains full access to the application without needing to provide local username and password credentials. * The system records that the login was completed via Google, ensuring a seamless and secure alternative authentication process.   3a) Invalid Credentials  1. The user enters an incorrect username or password.  2. The system displays an error message indicating invalid credentials.  3. The user is prompted to re-enter valid credentials or reset the password.  Postconditions:   * The user remains on the login page until valid credentials are provided or the user chooses to exit the login process. |
| **Post**  **Condition:** | Upon successful login, the user is authenticated and gains access to the system’s exclusive features and benefits. |

#### UC-3

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| **Use Case Number:** | UC-03 |
| **Use Case Name:** | Speech to Speech |
| **Overview:** | Enables a registered user to interact with the system via voice. The system captures the user's spoken input, converts it to text using speech recognition, processes the text with a large language model (LLM), and then converts the LLM’s response back into speech—all in the language chosen by the user. |
| **Actors:** | User, LLM API, Text to Speech, Speech to Text |
| **Pre condition:** | * The user has an existing account and is logged in. * The user is in the chat page * The user has selected the speech-to-speech mode. |
| **Flow:** | Main (success) Flow:   1. The user selects their preferred language from a list of supported options. Default English, or user preset using UC-13. 2. Record Voice: The system prompts the user to choose an audio input device (if multiple devices are available) and to grant the necessary permission. The user records their voice input. 3. Speech-to-Text Conversion: The system sends the recorded audio in small, parallelized chunks to a speech recognition service. The service converts the audio to text, supporting languages beyond English. 4. Interacting with the LLM: The converted text is forwarded to the LLM, which processes the input and generates a response. The response is formulated in the language initially selected by the user. 5. Text-to-Speech Conversion: The text-to-speech service converts the LLM’s text response back into speech. The spoken response is delivered to the user. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions:   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   2a) Microphone Not Detected:   1. The system lists all available audio capture devices and prompts the user to select one. 2. If the desired device is not listed, the user is advised to restart the system and update their audio drivers.   Postcondition:  The system proceeds only after a valid device is selected; otherwise, it remains in an error state.  2b) Microphone Permission Denied:   1. If the user denies microphone permission, the system displays a “Microphone Access Denied” error.   Postcondition:  The operation is paused, awaiting permission or a user-initiated abort.  2c) Microphone Malfunction:   1. If no audio input is detected even after a valid device is selected and permission is granted, the system assumes the microphone is malfunctioning.   Postcondition: The system displays a “Microphone Not Functioning” error and suggests checking the hardware or contacting support.  3-5a) Network issue   1. Error message for network not available given 2. User redirected to dashboard   Postcondition:  Error message shown, user redirected.  3b) Speech-to-Text conversion fails:   1. The system fails to communicate with speech-to-text API due to service downtime. 2. The user is shown error in ‘speech-to-text’ module. 3. The user is prompted to use text-to-speech.    1. Same as 5b   Postcondition:  The user is shown appropriate error and suggested alternate way of communication.  4b) LLM fails:   1. The system fails to communicate with LLM due to service downtime 2. The user is shown error message 3. The user is redirected to dashboard.   Postcondition:  The system halts further processing and informs the user until the issue is resolved.  5b) Text-to-Speech conversion fails   1. The system fails to communicate with text-to-speech API due to service downtime. 2. The user is shown error in ‘speech-to-text’ module. 3. The user is prompted to use text-to-text.   Postcondition:  The user is shown appropriate error and suggested alternate way of communication. |
| **Post**  **Condition:** | * The user's voice input is successfully processed, and an audio response is generated in the selected language. * The conversation state is updated for future interactions. * In the event of an error, the system remains in a safe state, and the user receives clear instructions on how to proceed. |

#### UC-4

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| **Use Case Number:** | UC-04 |
| **Use Case Name:** | Text-to-Speech |
| **Overview:** | Enables a registered user to interact with the system via a mixture of text and voice. The system captures the user's text input, processes the text with a large language model (LLM), and then converts the LLM’s response back into speech—all in the language chosen by the user. |
| **Actors:** | User, LLM API, Text to Speech |
| **Pre condition:** | * The user has an existing account and is logged in. * The user is in the chat page * The user has selected the speech-to-speech mode. |
| **Flow:** | Main (success) Flow:   1. The user selects their preferred language from a list of supported options. Default English, or user preset using UC-13. 2. The user types their message into the interface. 3. Interacting with the LLM: The converted text is forwarded to the LLM, which processes the input and generates a response. The response is formulated in the language initially selected by the user. 4. Text-to-Speech Conversion: The text-to-speech service converts the LLM’s text response back into speech. The spoken response is delivered to the user. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions:   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   3-4a) Network issue   1. Error message for network not available given 2. User redirected to dashboard   Postcondition:  Error message shown, user redirected.  3b) LLM fails:   1. The system fails to communicate with LLM due to service downtime 2. The user is shown error message 3. The user is redirected to dashboard.   Postcondition:  The system halts further processing and informs the user until the issue is resolved.  4b) Text-to-Speech conversion fails   1. The system fails to communicate with text-to-speech API due to service downtime. 2. The user is shown error in ‘speech-to-text’ module. 3. The user is prompted to use text-to-text.   Postcondition:  The user is shown appropriate error and suggested alternate way of communication. |
| **Post**  **Condition:** | * The user’s text input is successfully processed. * An audio response is generated and played in the user’s selected language. |

#### UC-5

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| **Use Case Number:** | UC-05 |
| **Use Case Name:** | Text-to-Text |
| **Overview:** | Enables a registered user to interact with the system via a mixture of text and voice. The system captures the user's text input, processes the text with a large language model (LLM)—all in the language chosen by the user. |
| **Actors:** | User, LLM API |
| **Pre condition:** | * The user has an existing account and is logged in. * The system’s LLM is available and connected. * The user interface supports text input and output. |
| **Flow:** | Main (success) Flow:   1. The user selects their preferred language from a list of supported options. Default English, or user preset using UC-13. 2. Enter Text: The user types of their query or message into the interface. 3. Interacting with the LLM: The converted text is forwarded to the LLM, which processes the input and generates a response. The response is formulated in the language initially selected by the user. 4. The text response is displayed. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions:   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   3a) Network issue   1. Error message for network not available given 2. User redirected to dashboard   Postcondition:  Error message shown, user redirected.  3b) LLM fails:   1. The system fails to communicate with LLM due to service downtime 2. The user is shown error message 3. The user is redirected to dashboard.   Postcondition:  The system halts further processing and informs the user until the issue is resolved. |
| **Post**  **Condition:** | The user’s text input is successfully processed, and the text response is displayed in the selected language. |

#### UC-6

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| **Use Case Number:** | UC-06 |
| **Use Case Name:** | Speech-to-Text |
| **Overview:** | Enables a registered user to interact with the system via voice. The system captures the user's spoken input, converts it to text using speech recognition, processes the text with a large language model (LLM)—all in the language chosen by the user. |
| **Actors:** | User, LLM API, Speech to Text |
| **Pre condition:** | * The user has an existing account and is logged in. * A functional microphone is connected, detected, and permissions are granted. * The speech-to-text (STT) API is available. |
| **Flow:** | Main (success) Flow:   1. The user selects their preferred language from a list of supported options. Default English, or user preset using UC-13. 2. The user types their message into the interface. 3. Speech-to-Text Conversion: The system sends the recorded audio in small, parallelized chunks to a speech recognition service. The service converts the audio to text, supporting languages beyond English. 4. Interacting with the LLM: The converted text is forwarded to the LLM, which processes the input and generates a response. The response is formulated in the language initially selected by the user. 5. The text response is displayed |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions:   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   2a) Microphone Not Detected:   1. The system lists all available audio capture devices and prompts the user to select one. 2. If the desired device is not listed, the user is advised to restart the system and update their audio drivers.   Postcondition:  The system proceeds only after a valid device is selected; otherwise, it remains in an error state.  2b) Microphone Permission Denied:   1. If the user denies microphone permission, the system displays a “Microphone Access Denied” error.   Postcondition:  The operation is paused, awaiting permission or a user-initiated abort.  2c) Microphone Malfunction:   1. If no audio input is detected even after a valid device is selected and permission is granted, the system assumes the microphone is malfunctioning.   Postcondition: The system displays a “Microphone Not Functioning” error and suggests checking the hardware or contacting support.  3-4a) Network issue   1. Error message for network not available given 2. User redirected to dashboard   Postcondition:  Error message shown, user redirected.  3b) Speech-to-Text conversion fails:   1. The system fails to communicate with speech-to-text API due to service downtime. 2. The user is shown error in ‘speech-to-text’ module. 3. The user is prompted to use text-to-speech.    1. Same as 5b   Postcondition:  The user is shown appropriate error and suggested alternate way of communication.  4b) LLM fails:   1. The system fails to communicate with LLM due to service downtime 2. The user is shown error message 3. The user is redirected to dashboard.   Postcondition:  The system halts further processing and informs the user until the issue is resolved. |
| **Post**  **Condition:** | The spoken input is successfully converted to text and displayed for the user. |

#### UC-7

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| **Use Case Number:** | UC-07 |
| **Use Case Name:** | Session History and Insights |
| **Overview:** | Allows user to view their past interactions through saved session logs. This allows users to keep a track record of the overall development of child better. |
| **Actors:** | User |
| **Pre condition:** | * User is logged into the system, * User accesses the chat history screen via main page. |
| **Flow:** | Main (success) Flow:   1. Access Request: The user selects the "Session History" option. 2. Data Retrieval: The system retrieves the user's session logs. 3. Display Results: The system displays the processed session history along with key features such as notes etc. 4. User Interaction: The user can filter or sort the displayed data (e.g., by date range or category etc) to gain specific insights. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   2a)No Session Data Available   1. The system detects that insufficient session logs exist for the user requesting to see this page. 2. The system displays a message informing the user that no session data is available. Postconditions:  * The user is notified that there is no available session data. * The user is prompted to initiate new conversations and sessions.   3a)Failing to load the data   1. If detailed information fails to load completely, the system shows an error message and prompts the user to try reloading the details. Postconditions**:**   The user is informed that the requested session data could not be loaded, and the user is prompted to try loading again. |
| **Post**  **Condition:** | The user is successfully able to view the specific details regarding the requested session and hence can track the overall development of child. |

#### UC-8

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| **Use Case Number:** | UC-08 |
| **Use Case Name:** | Feedback Mechanism |  |
| **Overview:** | Enables users to rate their experience and submit feedback about the system’s interactions. The collected feedback supports continuous improvement of the AI and overall user experience. The users can also report a technical problem they encounter while using the app. |
| **Actors:** | User |
| **Pre condition:** | The user is logged into the system.  The user navigates to action section via settings page. |
| **Flow:** | Main (success) Flow:   1. The user navigates to the ‘Report a Problem’ or ‘User Feedback’ section. 2. Select Category: The user chooses the relevant category (AI, Bug Report etc). 3. Submit Feedback: The user submits the feedback by clicking the "Submit Report" button. 4. Confirmation Display: The system processes the input, stores the feedback, and displays a confirmation message to the user. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions*:*   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved feedback data may be lost, and the user is advised to restart the feedback submission process after the system is restored to normal operation.   2a) If the user attempts to proceed without selecting a category, the system prompts them to choose one.  2b) If the user selects “Other,” the system may prompt for additional clarification. Postconditions*:*  The system ensures that relevant feedback is submitted by the user pertaining to a certain category.  4a) If submission fails due to a network error, the system displays a retry option.  4b) If the user cancels mid-submission, the system discards the current data and returns to the previous screen.  Postconditions:  It is ensured that the user feedback is successfully submitted, and the user is notified clearly regarding this. |
| **Post**  **Condition:** | The user successfully submits feedback and receives a confirmation message that their input has been recorded, contributing to the system's continuous improvement. |

#### UC-9

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| **Use Case Number:** | UC-09 |
| **Use Case Name:** | Toggle Dark Mode |
| **Overview:** | This use case describes how a user toggles the dark mode setting on the home page of the application. Dark mode provides an alternative UI theme to reduce eye strain and create a more comfortable viewing experience, which is necessarily important in a sensitive mental health environment. |
| **Actors:** | User |
| **Precondition:** | The user has an account and is logged into the application. |
| **Flow:** | Main (success) Flow:   1. The navbar has a dark mode toggle button displayed. 2. User Clicks Dark Mode Toggle: The user clicks the dark mode toggle button to toggle the UI theme. 3. System Processes Request: The system registers the toggle action and initiates the theme switch. 4. Theme Change Execution: The system applies the dark mode theme across the application interface. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   4a) Theme Application Failure   1. The system encounters an error when attempting to apply the dark mode theme. 2. The system displays an error notification indicating that the theme change could not be applied. 3. The UI remains in the current mode (either dark or light), maintaining status quo. 4. The system logs the error for further investigation.   Postconditions:  The user is informed of the issue, and no preference is updated until the error is resolved. |
| **Post**  **Condition:** | Upon successful completion, the user’s interface is updated to the selected theme (dark or light), and the chosen preference is saved for future sessions |

#### UC-10

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| **Use Case Number:** | UC-10 |
| **Use Case Name:** | User Account Management |
| **Overview:** | This use case describes how a logged-in user manages their account information within the AI-based parenting application. In addition to updating the personal details, the process emphasizes data integrity, privacy, and user control over sensitive information |
| **Actors:** | User |
| **Pre-condition:** | * The user is an existing account in the system and is logged into the system. * The user navigates to the account management page via the settings screen. |
| **Flow:** | Main (success) Flow:   1. Display Current Account Details and Preferences**:** The system retrieves and displays the user’s current account information (e.g., username, email, profile pic etc.). 2. Initiate Update Process:The user selects an “Edit” option to update specific details such as contact information etc. 3. Present Editable Form:The system displays an editable form pre-populated with the current account data. 4. User Makes Changes**:** The user updates one or more fields—such as changing email, updating password etc. 5. Validate Input Data**:** The system validates the entered data (e.g., checks for valid email format, password strength etc). 6. Save Updated Account Detail**s:** If validation succeeds, the system updates the account information in the secure database and logs the changes for auditing purposes. 7. Confirm Update**:** The system provides a confirmation message to the user indicating that the account or profile information has been successfully updated. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions*:*   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved feedback data may be lost, and the user is advised to restart the feedback submission process after the system is restored to normal operation.   1a) Data Retrieval Failur**e**   1. The system fails to retrieve the user's account details and preferences from the database. 2. The system displays a dedicated error notification informing the user that the account information could not be loaded. 3. The notification advises the user to refresh the page or try again later and provides contact details for support if the issue persists.   2a) Update Process Cancellation   1. The user decides not to proceed with updating their account details and in the process click the cancel option or button before saving any changes. 2. The system discards any unsaved changes and returns the user to account overview screen.   Postconditions*:*  No changes are applied to the user's account; the account information and preferences remain as previously stored.  5a) Invalid Data Entry   1. The user submits updated account information that contains invalid entries (e.g., an invalid email format, a weak password etc) and the system detects such entries during validation step.   P**o**stconditions: The update is not saved until all input data meets the validation criteria.  6a) Update Save Failure   1. The system encounters an error (e.g., a database connectivity issue) while attempting to save the updated account details. 2. The system displays an error notification informing the user that the update could not be saved at this time. 3. The user is prompted to attempt saving the changes again once the issue is resolved.   Postconditions: No changes are committed to the user's account; the account remains unchanged until a successful update can be saved. |
| **Post**  **Condition:** | * The user’s account information and mood tracking preferences are updated securely and are reflected in subsequent sessions. * All modifications are logged for audit and security purposes, ensuring transparency and compliance with data protection and privacy guidelines. |

#### UC-11

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| **Use Case Number:** | UC-11 |
| **Use Case Name:** | User Privacy and Data Control |
| **Overview:** | This use case deals with how the user can manage the processing of their personal data according to their own consent. The user can overview authentication, session security and child protection settings. |
| **Actors:** | User |
| **Pre-condition:** | * User is already authenticated and logged in. * The user has previously provided consent for data storage. * There is existing personal data (e.g., conversation logs) stored in the system. |
| **Flow:** | Main (success) Flow:   1. Access Privacy and Security Settings: The user navigates to the “Security” or “Privacy” section in the app settings. 2. View Available Controls: The system displays various options such as App PIN Lock, Biometric Authentication, Auto Logout, and Child Protection settings. 3. Modify Settings: The user toggles or updates the relevant settings (e.g., enables PIN Lock, etc). The user can also delete personal data of their child and prevent media sharing by clicking on the respective controls. 4. Save or Confirm Changes: The user confirms any modifications, and the system applies the updated privacy and security configurations. 5. Post-deletion Feedback and Update: The system displays a confirmation message indicating successful application of changes and automatically updates the personal data summary to reflect the changes. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting. 3. The system logs detailed crash information (including context and error codes) for troubleshooting and recovery purposes.   Postconditions*:*   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved feedback data may be lost, and the user is advised to restart the feedback submission process after the system is restored to normal operation.   1a) If the “Security” or “Privacy” section fails to load (network or server error), the system displays an error message and offers a “Retry” option.   * Postconditions: The user remains unable to access the security and privacy interface, and the incident is logged for further investigation.   2a) If the controls fail to load (e.g., partial data retrieved), the system displays what is available and prompts the user to refresh.  2b) If certain settings are restricted (e.g., user role limitations), the system disables those options and explains why they’re unavailable.  Postconditions:  The system notifies the user why certain controls are disabled or restricted. In case of a load failure, the user is prompted to try again reloading.  3a) If enabling one setting conflicts with another (e.g., toggling biometric while PIN is disabled), the system alerts the user and provides guidance on resolving the conflict.  3b) If deleting personal data fails (due to server error or insufficient permissions), the system displays an error message and suggests retrying or contacting support.  Postconditions:  The applied changes are not reflected, and the user is notified clearly regarding the same.  4a) If saving fails (e.g., network outage), the system notifies the user and provides a “Retry” or “Cancel” option.  4b) If the user cancels before confirming, the system discards any changes and reverts to previous settings.  Postconditions:  The applied changes are not saved, and the user is requested to update the changes again. |
| **Post**  **Condition:** | * The selected personal data is securely removed from the system and other changes are successfully applied depending upon user preference. * Audit logs are updated with details of the deletion for compliance and accountability. * The updated data summary reflects the current state of the user’s stored data. * The user’s privacy rights are maintained according to applicable privacy standards. |

#### UC-12

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| **Use Case Number:** | UC-12 |
| **Use Case Name:** | Vaccination Charting and Scheduling |
| **Overview:** | The system keeps track of the schedule of vaccine doses to be administered to user’s child and comes up with relevant recommendations regarding the vaccination programs. |
| **Actors:** | User |
| **Pre condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to the vaccination page via the track development page on main screen. |
| **Flow:** | Main (success) Flow:   1. The system displays various data input fields such as disease for which vaccine is to be administered, the dose and the expected date of vaccination. 2. After filling in the required details, the user is required to upload doctor’s prescription. 3. The user submits the required information to the system. 4. The system sends the provided data to the database for processing. 5. The system displays a confirmation message indicating that the provided information has been logged and will be analysed for charting and scheduling. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved sessionw data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   2a) Invalid Input Data: The system detects that one or more input fields contain invalid data or are incomplete.   1. The system highlights the invalid fields and displays error messages with instructions for correction. 2. The user updates the information and resubmits the form.   Post Conditions:   * + The user is clearly notified that the input data is invalid.   + The data update process remains incomplete until valid data is provided.   4a) Network error   1. Error message to try again later is displayed 2. User is prompted to fill the input fields again.   Postconditions:  Relevant error message is displayed.  4b) Database error   1. Error message shown for cannot connect to database, try again later. 2. User is redirected to dashboard   Postconditions:  Error message is displayed. |
| **Post**  **Condition:** | The system successfully logs the user input and analyses it to keep track of the vaccine schedule of the user’s child and notifies the user for the same. The system also presents recommended vaccine charts to the user based on uploaded doctor’s prescription. |

#### UC-13

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| **Use Case Number:** | UC-13 |
| **Use Case Name:** | Contact Paediatrician |
| **Overview:** | The system helps user interact with paediatrician to monitor the progress of child more effectively and helping the parent solicit better parenting advice. |
| **Actors:** | User, Paediatrician |
| **Pre condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to the contact paediatrician page via the track development page on main screen. |
| **Flow:** | Main (success) Flow:   1. The system displays a list of doctors along with their contact numbers for user convenience. 2. The user browses the list and selects a paediatrician. 3. The system opens the selected paediatrician's profile with additional details (e.g., specialty, availability). 4. The user taps the ‘Contact’ button to message or call the doctor. 5. The system connects the user directly to the chosen paediatrician. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later, or contact support with a reference code for troubleshooting.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) The system is unable to retrieve the doctor list and displays an error message along with a retry option.  1b) If the list is empty, the system informs the users and suggests adjusting search criteria or trying again later.  2a) If the user selects a doctor who is currently unavailable, the system displays ‘Not Available’ indicator and suggests alternative doctors.  3a) If the profile fails to load (perhaps due to a server issue), the system shows an error message and offers a “Retry” button to attempt loading the details again.  4a) If the app lacks the necessary permissions to initiate a call or send a message, it prompts the user to grant the required permissions before proceeding.  5a) If the call connection fails due to network issues, the system displays a message informing the user of the problem and offers a “Retry” option. |
| **Post**  **Condition:** | The system logs the user interaction and ensures the paediatrician is contacted. |

#### UC-14

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| **Use Case Number:** | UC-14 |
| **Use Case Name:** | Milestone Tracking |
| **Overview:** | The system helps parents log important milestones and phases in the development of their child right from the child uttering his/her first word to taking the first steps. |
| **Actors:** | User |
| **Pre condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to the analytics dashboard page via the track development page on main screen. |
| **Flow:** | Main (success) Flow:   1. The system displays a milestone dashboard highlighting key events like ‘first words’, ‘first steps’ etc. 2. User selects a milestone to log or review. 3. The system prompts the user to input details (date, notes etc) for the selected milestone. 4. The system records the milestone along with date in child’s timeline. 5. The system analyses the milestone and provides suggestions for upcoming milestones (The system generates a checklist of expected milestones from reputable guidelines like those of WHO). |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) The system is unable to load any milestones prompting the user to try again or redirecting him back to dashboard screen.  1b) If no milestones are available or added, the system prompts the user to add new milestones.  2a) If no details for the selected milestone are shown., the system prompts the user to input the required details and then try again.  **3**a) If the input fails to save, the system displays an error and offers a retry option.  **3b)** If required details are incomplete, the system highlights the missing fields and prompts the user to fill them in.  4a) If a duplicate milestone is detected, the system does not log it and asks the user to upload a different milestone. |
| **Post**  **Condition:** | The system displays the child’s development timeline to the user on the analytics dashboard with all the logged milestones tick marked. |

#### UC-15

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| **Use Case Number:** | UC-15 |
| **Use Case Name:** | Physical Growth Tracker |
| **Overview:** | Tracking height, weight and head circumference over time and comparing it with typical developmental ranges to provide a reference point. |
| **Actors:** | User |
| **Pre condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to the physical attributes page via the track development page on main screen. |
| **Flow:** | Main (success) Flow:   1. The system displays physical attributes such as height, weight etc in the form of a line plot. 2. The system prompts the user to input the latest measurements. 3. The system records the new measurements and updates growth timeline. 4. The system compares the user input with standard development range and provides relevant feedback. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) If the tracker fails to load, the system displays an error message prompting the user to retry.  1b) If the timeline is empty, the system prompts the user to enter the current measurements and the system logs the input.  **2a)** If the user enters incomplete data, the system prompts to fill in all required fields.  **2b)** If the values are formatted incorrectly or appear unrealistic, the system displays a validation error for correction.  **3**a) If the input fails to save, the system displays an error and offers a retry option.  **4b)** If measurements deviate significantly from typical ranges, the system highlights these deviations and suggests consulting a paediatrician. (Achieved through UC-15) |
| **Post**  **Condition:** | The child's updated growth data is saved and compared against standard ranges, with relevant feedback displayed to the user. |

#### UC-16

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| **Use Case Number:** | UC-16 |
| **Use Case Name:** | User Subscription |
| **Overview:** | Allows the user to view the current subscription plan along with other details. |
| **Actors:** | User, Payment Gateway |
| **Pre condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to my subscription page via the settings page on main screen. |
| **Flow:** | Main (success) Flow:   1. The system shows the user’s current plan along with its details. 2. The system displays a comparison table highlighting the features available in Free vs. Premium plans. 3. The user reviews the benefits of Premium and taps the “Upgrade to Premium” button. 4. The system prompts the user for payment information (e.g., card details) or provides alternate payment methods. 5. After processing payment, the system updates the user’s plan to Premium and confirms the successful upgrade. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) If the subscription page fails to load, the system shows an error message and offers a “Retry” option.  **1b)** If the current plan details are unavailable, the system shows a placeholder message and suggests refreshing or contacting support.  **3a) If** the user decides not to upgrade, they can cancel and return to the main settings page.  3b) If the upgrade option is temporarily unavailable, the system displays an error and suggests trying again later.  **4a)** If the payment gateway is unavailable, the system informs the user and allows them to retry or select an alternative method.  **4b)** If payment details are invalid, the system shows an error and prompts the user to re-enter or choose a different payment method.  **5a)** If confirmation fails (e.g., payment error), the system notifies the user and suggests retrying.  **5b)** If the user’s subscription status can’t be updated immediately, the system displays a temporary pending status and confirms via notification once successful. |
| **Post**  **Condition:** | In case the user decides to upgrade his/her plan, the user's subscription status is updated to reflect the new plan, with the payment processed and premium features activated. |

#### UC-17

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| **Use Case Number:** | UC-17 |
| **Use Case Name:** | Community Support: Contacting with Other Parents |
| **Overview:** | This use case enables the user to interact with other users of the app so that they can discuss the well-being of their children and seek each other’s valuable advice. |
| **Actors:** | User |
| **Pre-condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to community support screen via main screen. |
| **Flow:** | Main (success) Flow:   1. Find Parents: User locates other parents through search, filters (e.g., child’s age, interests), or a suggested list. 2. Select Parent Profile: User taps on a specific parent’s profile to view basic info and contact options. 3. Initiate Contact: User chooses to send a direct message, friend/connection request, or invitation to a chat group. 4. Ongoing Communication: Once accepted or replied, a conversation thread is established. Parents can continue to exchange messages and media as needed. |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) If the community support page fails to load, the system shows an error message and offers a “Retry” option.  Postcondition: The user is redirected back to the main page.  2a) No matches are found for parents pertaining to the search filter or criteria.  Postcondition: The user is promoted to modify their criteria to get better results.  3a) Inability to access contact. The user is blocked from initiating contact (e.g., due to previous violations or account restrictions).  Postcondition: The action is halted until the issue is resolved or restrictions are lifted. |
| **Post**  **Condition:** | The user can contact other parents as well and their conversations will also be logged enabling them to track the development of their children better. |

#### UC-18

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| **Use Case Number:** | UC-18 |
| **Use Case Name:** | Notification System and Settings |
| **Overview:** | The system sends notifications to the user regarding any major actions taken by the user or any other significant changes pertaining to user account or application. |
| **Actors:** | User, Email Service Provider |
| **Pre-condition:** | * The system is up and running. * The user is authenticated and already logged in. * The user navigates to notifications section under my account page via the settings page on main screen. |
| **Flow:** | Main (success) Flow:   1. Toggle General Notifications: User can enable/disable “Push Notifications” to receive alerts on their device. User can enable/disable “Email Notifications” to receive alerts via email. 2. Select Types of Notifications: User can choose which specific notifications to receive, such as:    1. New Messages (e.g., from other parents or caregivers)    2. Reminders (e.g., upcoming appointments, tasks)    3. App Updates (e.g., feature updates or important changes)    4. Marketing Emails (e.g., promotional or newsletter content)    5. Activity Summary (e.g., periodic summaries of app usage or child’s progress) 3. Save or Confirm Changes: User taps “Save Settings” (or equivalent action) to confirm notification preferences. 4. System Feedback: App confirms that settings have been saved successfully (e.g., displaying a brief message or checkmark). 5. Ongoing Notifications: Based on the user’s selections, the app will send or suppress notifications accordingly (push, email, or both). |
|  | Alternate Flow:  \*a) System Crash   1. The system halts normal processing and displays a dedicated error notification page to the user, indicating that a system error has occurred. 2. The error page provides instructions to refresh the page, try again later.   Postconditions**:**   * The user is redirected to a safe error state and informed about the system crash. * Any unsaved session data may be lost, and the user is advised to restart the session after the system is restored to normal operation.   1a) If the notifications or settings page fails to load, the system shows an error message and offers a “Retry” option.  Postcondition: User is redirected back to settings page and has to load the notifications screen again.  2a) User toggles on “Push Notifications,” but device-level push permissions are disabled. App displays a prompt instructing the user to enable push notifications in the device settings.  Postcondition: User cannot enable push notifications in the app until device permissions are granted.  3a) User tries to enable a notification type that is currently disabled or not available in their region/account plan. App displays a message indicating the feature is unavailable.  Postcondition: User cannot select this notification type until the feature is enabled or upgraded.  4a) User modifies notification settings but attempts to leave the page without saving. App prompts with “Unsaved changes” confirmation.  Postcondition: User either discards changes or returns to save them. |
| **Post**  **Condition:** | After the user updates his notification preferences the system acknowledges the changes and sends the notifications to the user accordingly. The user can make further changes to notification settings anytime. |

1. Aditya Gaur (2023101052), Manit Roy (2023113022), Raunak Seksaria (2023113019), Shivam Gupta (2023101062) [↑](#footnote-ref-2)