CONVERSATIONAL AI CHECKOUT

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Overview

- Introduction
- The Product
- Duration
- Problem
- Goal

Overview

Introduction:

Self-service softwares like the ones we use to check out groceries or buy tickets, have made life easier and faster. These products can be found in supermarkets and malls, these softwares streamline processes such as checkout thereby reducing the need for human assistance.

In a study by Kimberly and Samogyi, it was found that different segments of consumers have already adopted self-checkout, though at varying levels. It concludes that there is a general readiness among consumers to adopt smart grocery shopping with behavioral intention mostly influenced by consumers attitudes towards the mode of shopping and convenience (Kimberly & Samogyi, 2022). This simply means that many shoppers already use self-checkout, though some more than others. People are generally open to smarter shopping, like AI-powered software kiosks, especially if it's convenient and easy to use. Their willingness depends on how they feel about the technology and how much it improves their shopping experience.

This project aims to redesign the self-service kiosk experience by integrating conversational Artificial Intelligence (AI) to enable these kiosk to engage in real-time, natural language interactions with users making the process faster, easier, and more enjoyable.

Overview

The problem:

Although users are enthusiastic about using digital products for self-checkout, they expressed concern on how fast digital technologies are taking over and leaving no room for human interaction. The lack of human touch during the checkout process had left some users to feel completely satisfied after shopping.

The goal:

The goal is to create a product that's not just smart but also intuitive and user-friendly, transforming the way people of diverse groups interact with self-service technologies.

The product:

The product is designed to have friendly interactions with users while assisting them in locating products, clarifying instructions, resolving errors, and completing their checkout process smoothly. The Ehmart is a software designed to be used on self service checkout kiosks in supermarkets and grocery shops. It is designed to improve se-checkout and customer's shopping experience as a whole.

Project duration:

13 weeks.

Understanding the User

- User research
- Personas
- Problem statements
- User journey maps

Research Summary (150 words)

User Research: Summary

At the outset, I assumed that the product should be focused on helping users resolve common issues such as navigating the menu, recovering from errors, or dealing with unresponsive interfaces. But users expressed disappointment on how the whole process is boring because they no more have those little chats with the sales person while checking out their groceries. Hence, these challenges often led to depression, confusion or even task abandonment. Hence the goal was then adjusted to understand how people currently use self-service softwares and what they might expect from an improved system with conversational AI.

A recent study highlights the adoption of self-checkout technology among younger consumers, focusing on attitudes, social influences, and ease of use. Using the Theory of Planned Behavior (TPB), it was found that positive attitudes toward convenience and time-saving features significantly impact their willingness to adopt such technologies. However, technology anxiety remains a barrier, as users unfamiliar with the system may hesitate to engage.

User Research: Summary

The study also emphasizes that while subjective norms (social pressure) play a lesser role for younger users, perceived control over the technology significantly influences their intention to use it. Providing clear, step-by-step guidance and reducing perceived risks through user-friendly interfaces can enhance adoption rates.

These findings align with the project's goals of introducing conversational AI to make kiosks accessible and engaging. The inclusion of tailored assistance, such as guided navigation and empathetic responses, addresses key barriers identified in this research (Jalil & Koay, 2020).

In my personal research, young users were excited about the idea of using self-service checkouts but adult users, although they showed the same enthusiasm, they expressed concern on the fact that they are not really tech-savvy and would need more education on how to use these products. Users appreciated the idea of clear, step-by-step guidance and personalized help, making the overall experience feel smoother while enjoying interesting conversations with the AI. At the same time, there were concerns about accuracy of AI responses, and whether the system would be reliable during busy or high-stress moments.

User Research: Summary

Different groups of users brought unique needs to the table. For instance, tech-savvy users wanted quick and advanced features, while older adults preferred simple, patient guidance. First-time users emphasized the importance of clear instructions and reassurance, especially when dealing with unfamiliar technology.

These findings highlight the need for a conversational AI system that is both intelligent and approachable. A user-friendly design with intuitive navigation, strong trust-building measures, and inclusivity for people of all backgrounds is essential. By addressing these aspects, the AI-powered self service software can transform the shopping experience and make self-service more accessible and enjoyable for everyone.

User Research: Pain Points

1

Missing Human Connections

One significant issue that was discovered was that customers, especially older adults, miss chatting with cashiers while shopping. Using self-checkout feels lonely and boring, which can make the experience less enjoyable. Some even feel isolated, which makes them less likely to use these kiosks.

2

Hard for Non-Tech Users

While younger users were excited about using self-service checkout softwares, older users or those not comfortable with technology find self-checkout confusing. They always worry about making mistakes or not knowing how to fix them. This causes stress and frustration, and they often wish the system was easier to use. Or there was someone there to guide them step-by-step.

User Research: Pain Points

3

No Clear Guidance

Users like the idea of step-by-step instructions and personalized help. Current kiosks don’t adjust to individual needs—new users want simple directions, while tech-savvy users prefer faster options. This lack of flexibility often leads to mistakes and delays.

4

Concerns About Reliability

Although people like the idea of conversational AI, they worry it might not work well all the time, especially when busy. They’re also unsure if their personal information is safe, which makes them hesitant to use the system.

User Profile: George Bekert

Age: 62

Gender: Male

Occupation: Retired Teacher

Location: Suburban area

Tech-Savviness: Low

Lifestyle: George enjoys a relaxed pace of life and values face-to-face interactions. While he's open to technology, he often feels unsure about using advanced tools without help.

Shopping Habits: George visits his local supermarket weekly. He prefers traditional checkout counters but tries self-checkout kiosks occasionally to keep up with modern trends.

Needs and Expectations

•A simple and intuitive kiosk system with clear, step-by-step guidance.

•Reassurance and support throughout the process.

•Features that replicate the friendly interaction of a cashier.

Challenges

•Navigating kiosk interfaces without making mistakes.

•Feeling unsupported and rushed when things go wrong.

User Profile: Emily Tom

Age: 25

Gender: Female

Occupation: Marketing Specialist

Location: Urban area

Tech-Savviness: High

Lifestyle: Emily leads a busy, fast-paced life. She prefers efficient tools and technologies that help her save time while making everyday tasks convenient.

Shopping Habits: Emily shops multiple times a week, often in the evenings after work. She frequently uses self-checkout kiosks for speed but finds the experience uninspiring.

Needs and Expectations

•A seamless and quick checkout process..

•Conversational AI features that provide personalized suggestions and guidance.

•An engaging experience that makes mundane tasks more enjoyable.

Challenges

•The robotic and unengaging nature of current kiosks.

•Lack of quick solutions for occasional errors.

Persona: George Bekert

Problem statement:

George struggles with using self-checkout kiosks because they are confusing and lack the patient guidance he needs. He misses interacting with cashiers during his grocery shopping. He finds self-checkout kiosks confusing and difficult to use.

George Bekert

Age: 62
Gender: Male
Occupation: Retired Teacher
Tech-Saviness: Low
Location: Suburban Area

"Sometimes I just wish I could ask the kiosk what to do."

Goals:

- Feel confident and supported while using self-checkout kiosks.
- Have access to clear, step-by-step instructions.
- Avoid making mistakes or feeling rushed.

Frustraions

- Kiosks are hard to navigate and overwhelming.
- There's no one to help when he's stuck.
- He feels left out because technology isn't designed for people like him.

George is a retired teacher who wants to embrace technology but finds it challenging. He appreciates the idea of conversational AI that can patiently guide him while making the process feel more human and friendly.

Persona: Emily Tom

Problem statement:

Emily loves the convenience of self-checkout kiosks but finds them boring and uninspiring. While she understands technology, she feels that self-checkout kiosks are slow and not designed for her needs. She wishes they were more engaging and could offer quick, smart solutions when needed.

Emily Tom

Age: 25
Gender: Female
Occupation: Marketing Specialist
Tech-Saviness: High
Location: Urban Area

"I know technology can be both smart and fun?"

Goals:

- Complete her shopping quickly and efficiently.
- Enjoy a more engaging and personalized self-checkout experience.
- Have access to helpful features that reduce the time spent on errors.

Frustraions

- The process feels too robotic and lacks interaction.
- No way to fix issues quickly if something goes wrong.
- Kiosks often fail to offer helpful shortcuts or suggestions.

Emily is a young professional who values efficiency but dislikes how dull and impersonal self-service kiosks feel. She's excited about the idea of conversational AI that can guide her and make the experience more engaging.

User Journey Map/Task Scenario

Scenario for George Bekert: Our user journey map centered on George, illustrating his steps.

Task: George visits his local supermarket to purchase groceries for the week. He decides to try the AI-powered self-checkout kiosk, though he feels nervous about using it.

Action: When George hesitates while looking for the correct payment option, the AI provides clear instructions and reassures him.

Action: George selects the "assisted mode" option on the kiosk. The AI welcomes him with a friendly message.

Action: George successfully completes the checkout and feels proud for managing the process with the AI's help.

User Journey Map/Task Scenario

Scenario for Emily Tom: Our user journey map centered on Emily, illustrating her steps.

Task: Emily is at a busy supermarket and need to buy a few groceries for dinner for dinner .

Action: She approaches the AI-powered self-checkout kiosk.

Action: As she starts scanning her items, she notices that the AI starts discussing with her while she is scanning her items.

Action: She continues conversing with the AI

Action: Midway, an item doesn't scan properly. Instead of frustration, Emily interacts with the conversational AI, which provides a quick solution: "It looks like there's an issue with this scan. Would you like to try again or input the barcode manually?"

Action: She completes the checkout, impressed by the AI's speed and engaging interaction.

Starting the Design

- Paper wireframes
- Digital wireframes
- Low-fidelity prototype
- Usability studies

Digital wireframes

When I started designing the self-service conversational software, I had to focus on making it very simple for customers to understand and use, user-friendly and inclusive for all types of users. These are the factors I considered:

1. Easy-to-Use Interface

The screen should be clear and organized, with large, readable buttons and simple instructions.

Use icons and labels to help users understand what to do without confusion.

2. Accessibility

The design should be usable for people with disabilities, language barriers or limited tech skills.

3. Conversational AI Support

Include an AI assistant that can talk with the users to answer questions or guide them through the process. Also, a conversation interface where users can see in real-time, their conversation with the AI in order to avoid mis-communication.

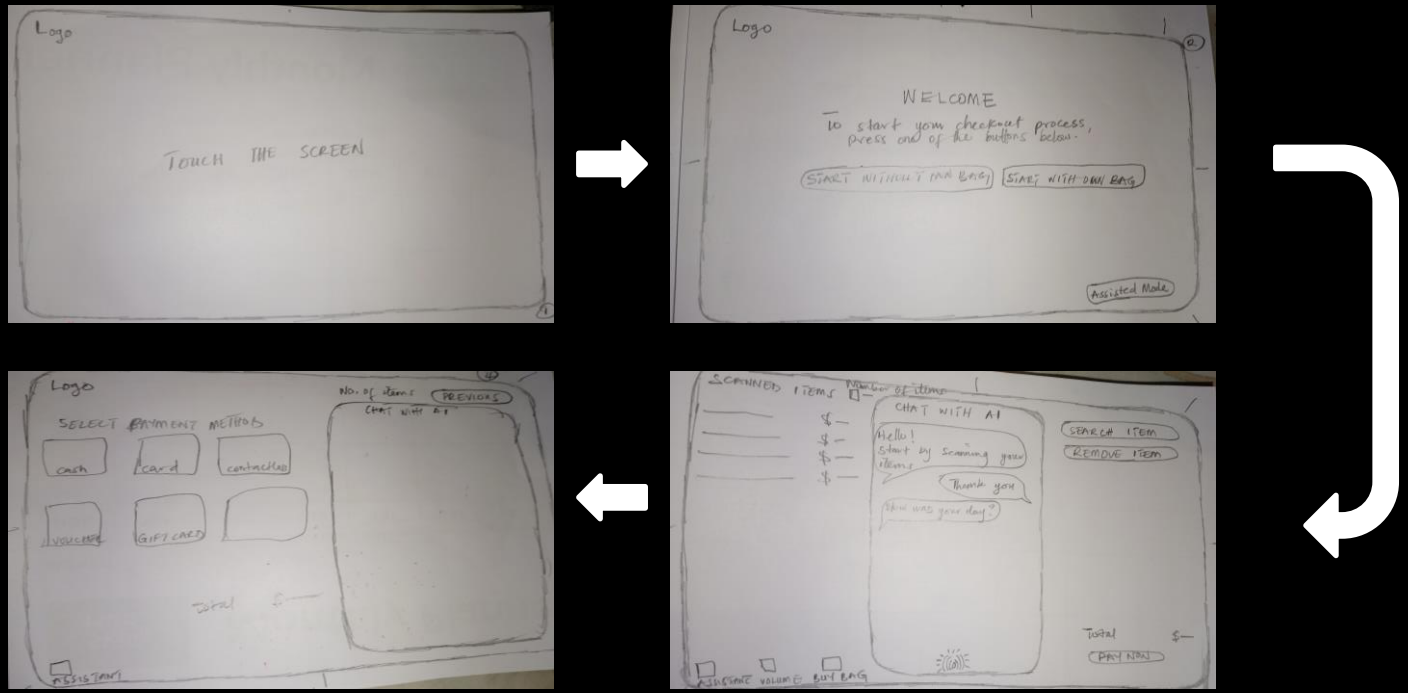
4. Multiple Payment Options

Make sure the software accepts different payment methods like cash, card, gift cards, etc.

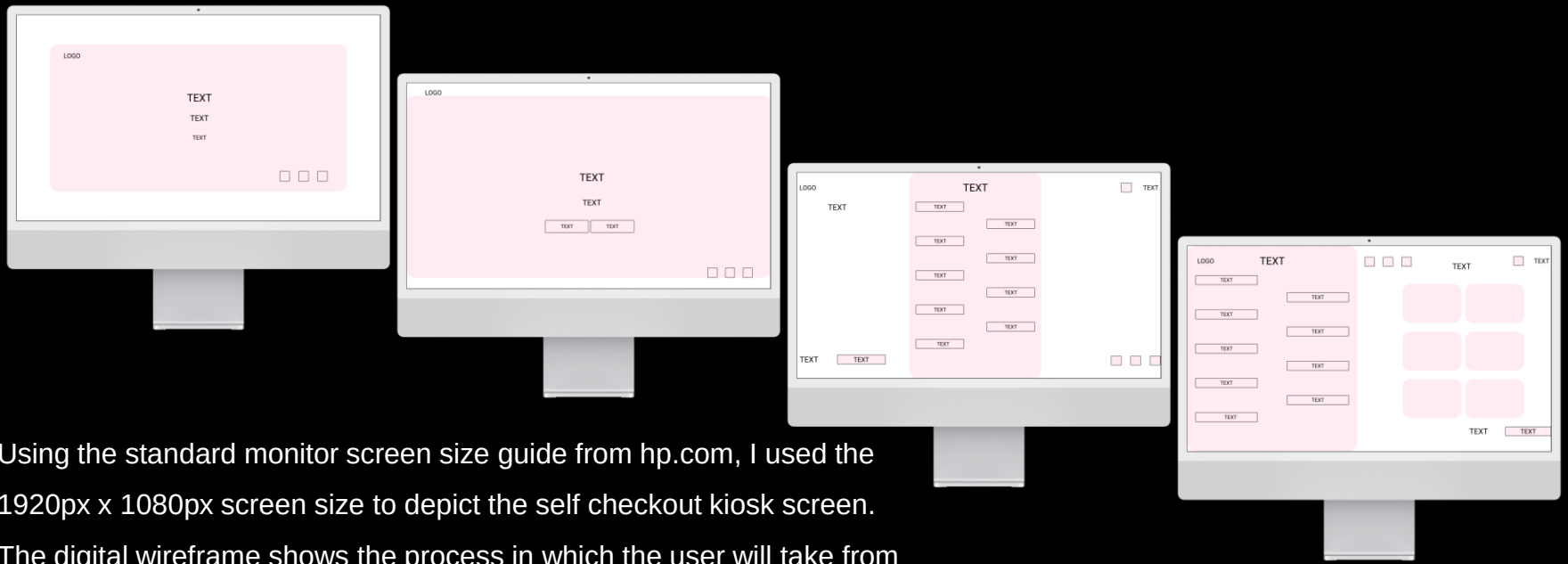
Clearly state when the payment has been accepted.

Paper wireframes

This was just a basic paper wireframe illustrating a really simple idea of what the kiosk would look like. I know it does not look appealing, it was just the initial design stage.



Digital wireframes



Using the standard monitor screen size guide from hp.com, I used the 1920px x 1080px screen size to depict the self checkout kiosk screen. The digital wireframe shows the process in which the user will take from going to the kiosk to paying for the groceries. It will be designed it a way that it will not require the user to do so many tasks. This is to avoid users from getting frustrated and tired during the check-out process.

Usability study: Parameters

Study type (Unmoderated usability study): The participants were allowed to use the prototyped system independently without real-time supervision. This method gave me their authentic user behavior, as they were able to interact naturally, just like they would in a real-world setting. This reduced pressure on them, making the feedback more genuine and unbiased. It was particularly helpful because I was able to identify usability issues and understanding how the system performs in everyday scenarios.

Location{Remote): Conducting the study remotely made it really convenient for participants. They could take part from the comfort of their home, workplace, or any location, removing the need for travel and cost nothing at all except their time. This flexibility encouraged participation from different types of users, giving me a meaningful understanding of the system's usability. This helped both me (the researcher) and the participants to save time and resources while still providing valuable data.

Usability study: Parameters

Participants: The survey was carried out with 5 people from different backgrounds and age range.

Length:
20-60 minutes

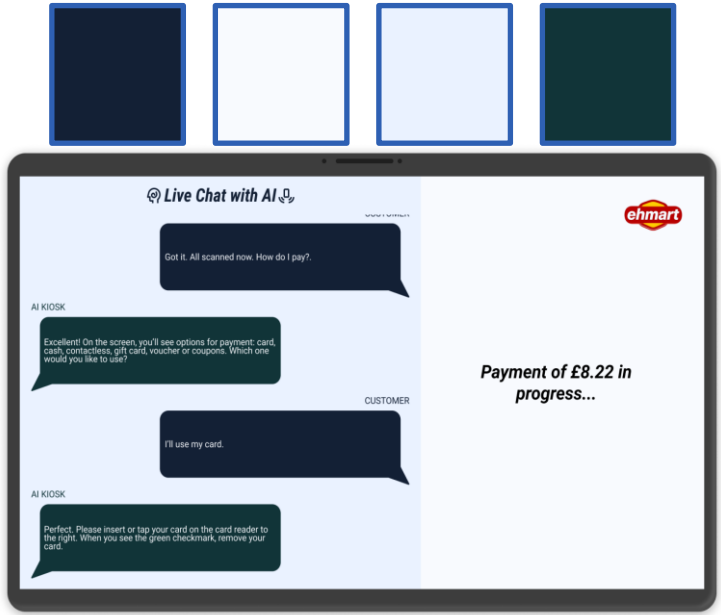
Refining the design

- Mock-ups
- High-fidelity prototype
- Accessibility
- References and Bibliographies

Hi-Fidelity Mock-ups

The colors codes—**132035**, **F8FAFE**, **EAF2FF**, and **113438**— were used to create a calming, modern look, enhancing readability with strong contrasts. The clean, sans-serif **Roboto** was used to ensure clarity, while the elegant **Rochester** was used to add a touch of sophistication, balancing functionality with a visual that is appealing.

The contrast between the dark and light tones makes the text and interactive elements stand out, making users to look effortlessly through the interface. Roboto's simplicity provides consistency and readability for instructions and buttons, while Rochester's decorative style adds personality, perfect for headers and welcome note on the landing screen. Together, I used these elements to form an approachable design that enhances user experience and ensures visual harmony.

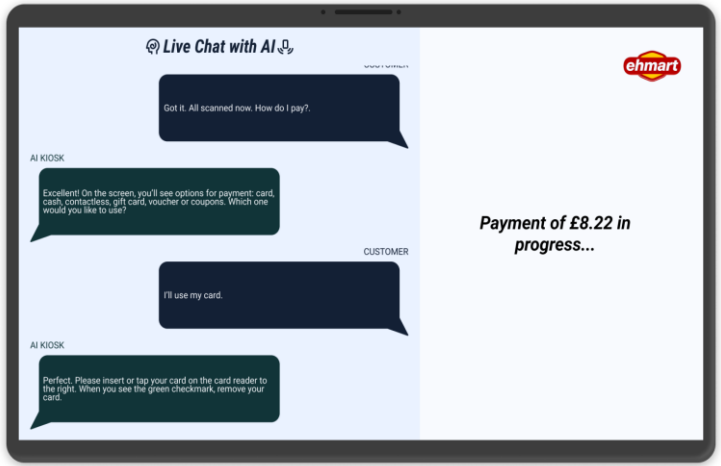


Hi-Fidelity Mock-ups

Notes on Goals and Thought Process

- Focused on designing a simple and user-friendly interface for diverse users.
- Started with a simple screen to map out key actions like scanning and checkout.
- Incorporated a voice conversational AI for a more engaging experience.

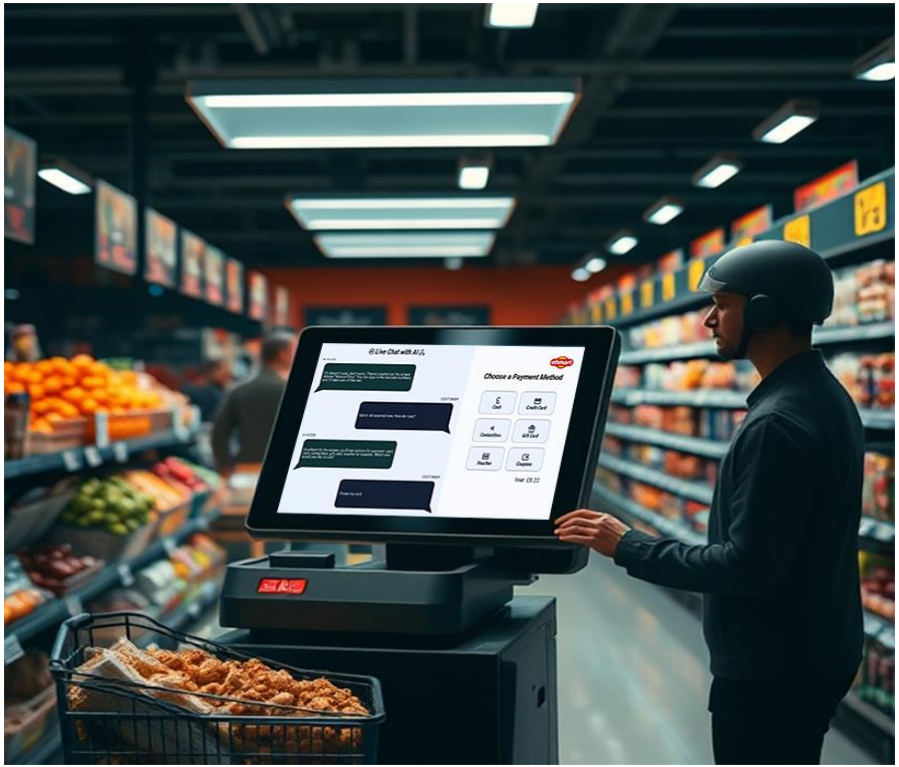
Before usability study



After usability study

High-Fidelity Mock-ups

- Feedback: The mock-up lacked realism.
- Action: Added a stand and hardware context to make it more realistic.
- Outcome: A more relatable mock-up that blends with the shopping environment.



High Fidelity Prototype

The prototype shows the indications on how the product will be used. The user can either click on the screen to start or they can voice activate it while scanning. The chat screen shows what is being said in order to avoid miscommunication. Start by clicking the screen then the assistant button. The rest is auto play to indicate the chat whilst the user is scanning. When it gets to the payment screen, you then click on the credit card payment method to go to the next screen and then it will auto play till checkout is complete.

Here is the link to the figma prototype - **https://www.figma.com/proto/j6yG2jAZjst8b4NqFJKaHA/AI-kiosk?page-id=0%3A1&node-id=50-262&viewport=-3592%2C-900%2C0.42&t=zMbcK1wlthTj45sS-1&scaling=min-zoom&content-scaling=fixed&starting-point-node-id=50%3A262**

Here is the link to the demo of the prototype - **https://youtu.be/rp5T8IoeVv8**

Accessibility Considerations

1

Ensured all buttons are large, clearly labeled, and within easy reach for users.

2

Added options to adjust language to accommodate users with language preferences.

3

The AI is also voice activated for clear communication, visually impaired users, along with tactile feedback for critical actions.

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