

ThespAI Glasses: Design Specification

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Last modified: December 5, 2024

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Project overview

Problem statement:

Many theatergoers struggle to fully enjoy live performances due to language barriers, unfamiliar cultural references, or difficulties following complex dialogue and staging. This creates an accessibility gap, limiting their ability to immerse themselves in the magic of theater.

Design question:

How can we help theater patrons with language and cultural barriers enjoy live performances more fully without disrupting the viewing experience?

Project scope

Focus areas:

- Smart glasses tailored to live theater environments: integrating subtitling, scene descriptions, and cultural reference explanations.
- Lightweight and user-friendly hardware with intuitive gesture-based controls.
- Minimal interface distractions for seamless immersion in performances.

Exclusions:

- Features targeting different user personas, e.g. vision impaired or hearing impaired theatergoers.
- General AR applications beyond theater settings.
- Complex customization features outside the core use case (e.g., advanced analytics or personalized user training).

Document audience: Hardware and software development teams specializing in wearable devices (potential partners for developing ThespAI glasses).

Major design decisions

1. **Device interaction paradigm:**

Decision: Use intuitive gestures for interactions, leveraging the physical properties of smart glasses instead of traditional app-based UX.

Rationale: Simplifies interaction for users, reducing cognitive load during performances. Based on user research, gestures like tapping and swiping are more intuitive for real-time adjustments without requiring a centralized settings menu.

2. **Core features:**

- **Subtitles with live translations:** Toggle on/off and select language through gestures.
- **Alt text for cultural and scene contexts:** Activate on-demand for additional explanations.
- **Replay functionality:** Scroll back through subtitles to review missed dialogue or context.

Rationale: These features directly address common barriers identified in user testing, such as difficulty following dialogue and missing cultural references.

3. **Minimal on-screen distractions:**

Decision: Hide subtitles/alt text while selecting a language, to help maintain focus on the stage.

Rationale: User feedback emphasized the importance of avoiding clutter to preserve the theater experience.

4. **Text adjustment controls:**

Decision: Incorporate pinch gestures for resizing text on the display.

Rationale: Allows users to customize text size for readability without requiring additional configuration menus.

Feature prioritization

Feature	Priority	Description
Live translations	P0	Real-time translation of dialogue.
Alt text	P0	Text descriptions of cultural references and scene elements.
Language	P0	Enables selection of preferred language.
Text size	P1	Adjustable text size for readability.
Closed captioning	P1	Text display of non-dialogue sounds for accessibility.
Volume	P1	Adjustable volume for integrated audio.
Brightness	P2	Allows customization of display brightness.
Visual cues	P2	Highlights key visual elements on stage.

Priority Levels:

P0 - Core functionality: *Essential for the product's primary purpose.*

P1 - Nice-to-haves: *Enhances the experience but not critical.*

P2 - Additional features: *Optional enhancements that add value.*

Technical specifications

Hardware requirements:

- Lightweight smart glasses with AR capabilities.
- Physical tap inputs on glasses for feature toggles.
- Computer vision for “virtual touchscreen” gesture detection (swiping through subtitles, pinching for text size).
- High-contrast AR display for subtitles and text overlays.
- Rechargeable battery with a minimum 6-hour runtime (longer than length of performances).

Hardware models:

- Base off of existing technology/features:
 - Meta Orion AR glasses
 - Snapchat AR spectacles,
 - Apple Vision Pro
 - Google Glasses
 - Hololens

Software features:

1. Context awareness:

- Identifying the name of the production as well as the current scene.
- Looking up supplemental information for context and references.

2. Subtitling system:

- Real-time subtitle generation with language translation.
- Adjustable text styles (e.g., speech bubble or standard subtitle layout).

3. Alt text and scene descriptions:

- On-demand text pop-ups for additional context.
- Metadata integration to provide cultural references.

4. Gesture-based controls:

- Left temple tap: Change language.
- Bridge tap: Toggle subtitles on/off.

- Right temple tap: Toggle scene descriptions on/off.
- Swipe: Scroll through subtitles.
- Pinch: Adjust text size.

5. Replay functionality:

- Subtitle scrolling for missed dialogue or cues.

Design justifications

1. Research insights:

- **User needs:** Surveys revealed demand for closed captions (87%), live translations (44%), and alt text for scene and cultural references (45%).
- **User challenges:** Participants often felt frustrated or hesitant to ask neighbors for explanations, highlighting the need for self-reliant solutions.

2. Prototype testing:

- Initial testing with two users revealed difficulties with traditional menu-based interaction models. Simplified, gesture-driven controls addressed these usability issues.
- Feedback also emphasized the need for decluttered visuals to preserve immersion.

3. Design principles:

- **Seamlessness:** The best interface is no interface. The tap-and-gesture model reduces the need for screen-based interactions.
- **Focus on accessibility:** By prioritizing features like live translations and adjustable text sizes, the design ensures inclusivity.

User flow example

Scenario: A non-native English speaker, Diego, attends a play and uses ThespAI glasses to enhance their experience. Diego:

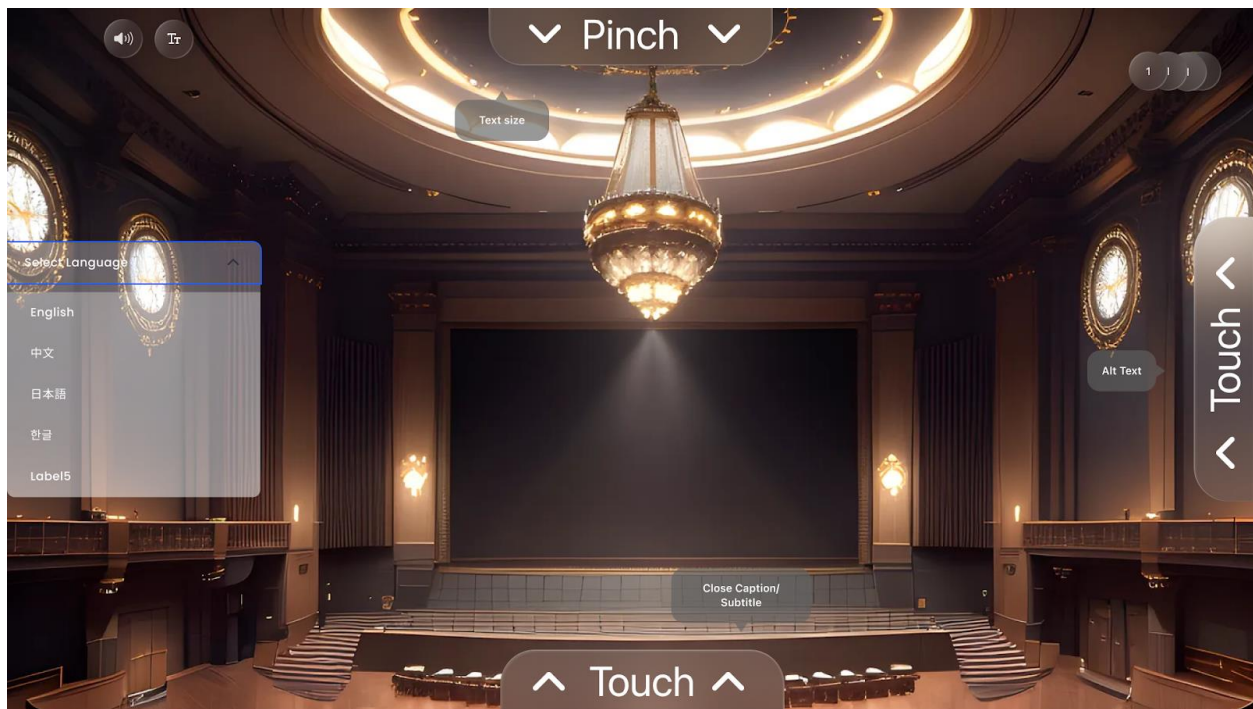
1. Puts on the glasses as the play begins.
2. Taps the left side to select their preferred language.
3. Taps the bridge to enable subtitles.
4. Pinches to adjust the subtitle text size for clarity.
5. During a particularly confusing scene, taps the right side to activate alt text, receiving cultural context and scene descriptions.
6. Swipes back to review missed dialogue before returning to live subtitles.

Appendix

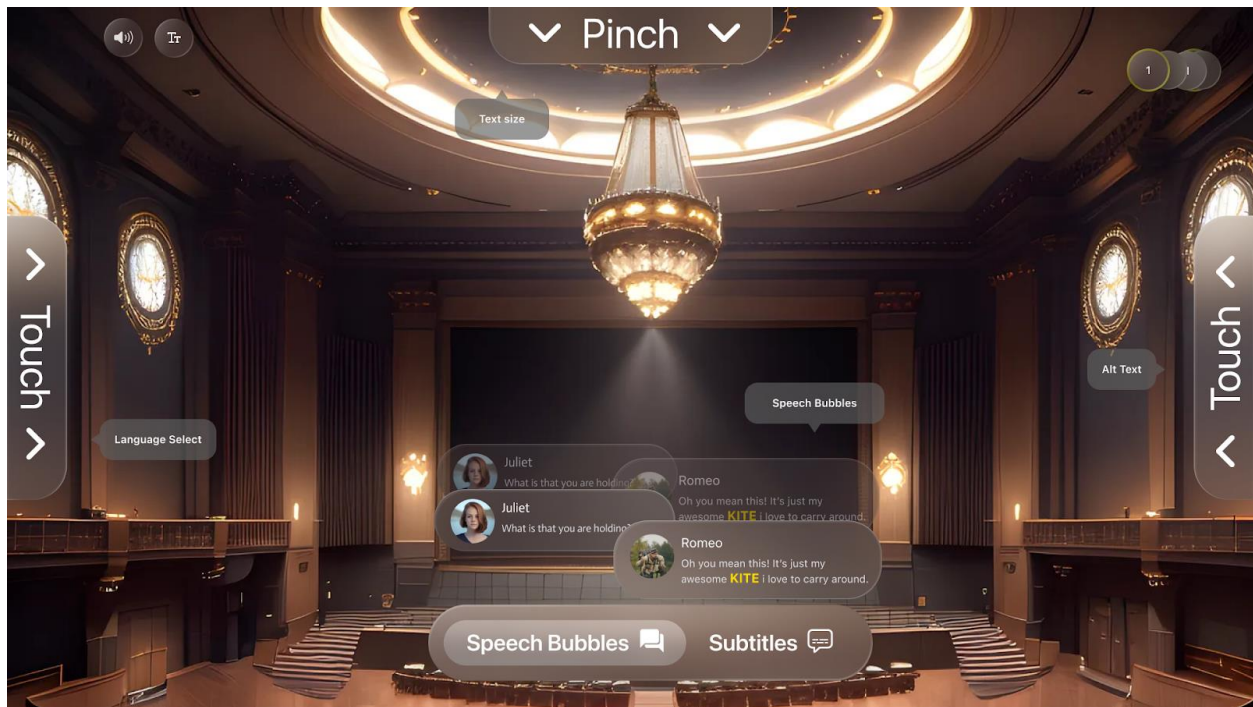
Included materials:

1. Pitch video: [Watch on YouTube](#)
2. Prototype designs (Figma link: [Prototype](#)).
3. Design artifacts: [Online portfolio with design assets](#)

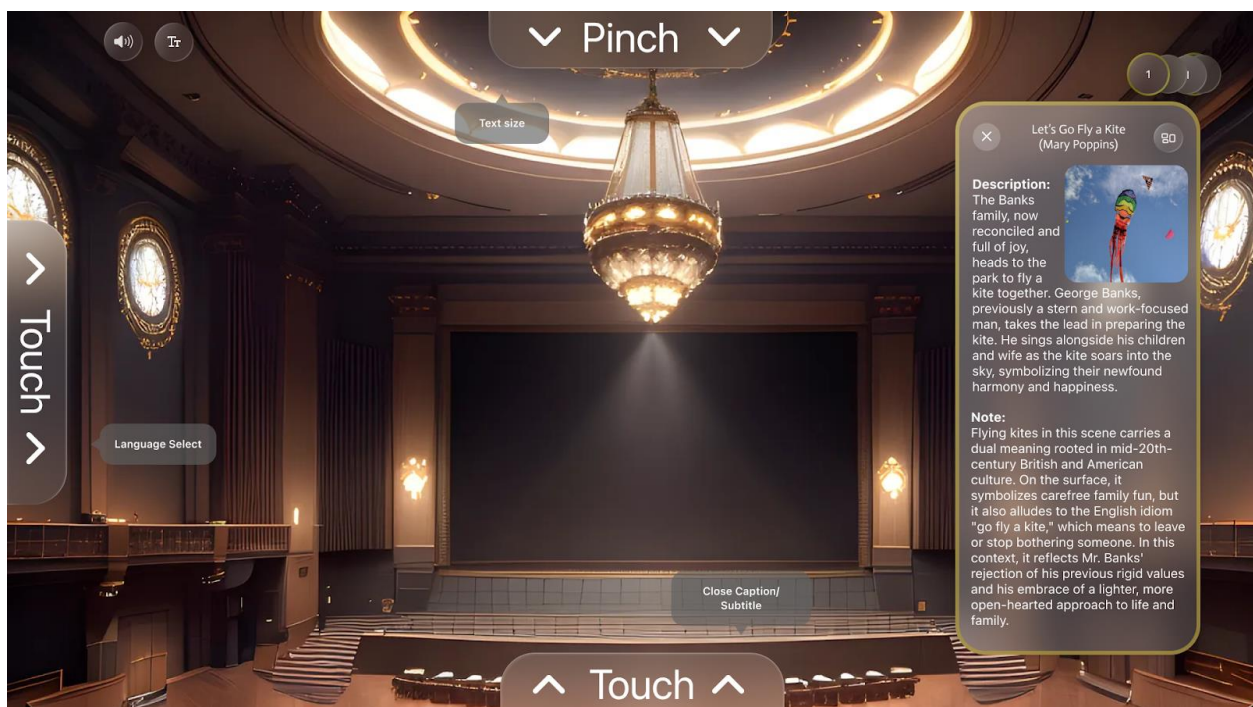
Prototype screenshots:



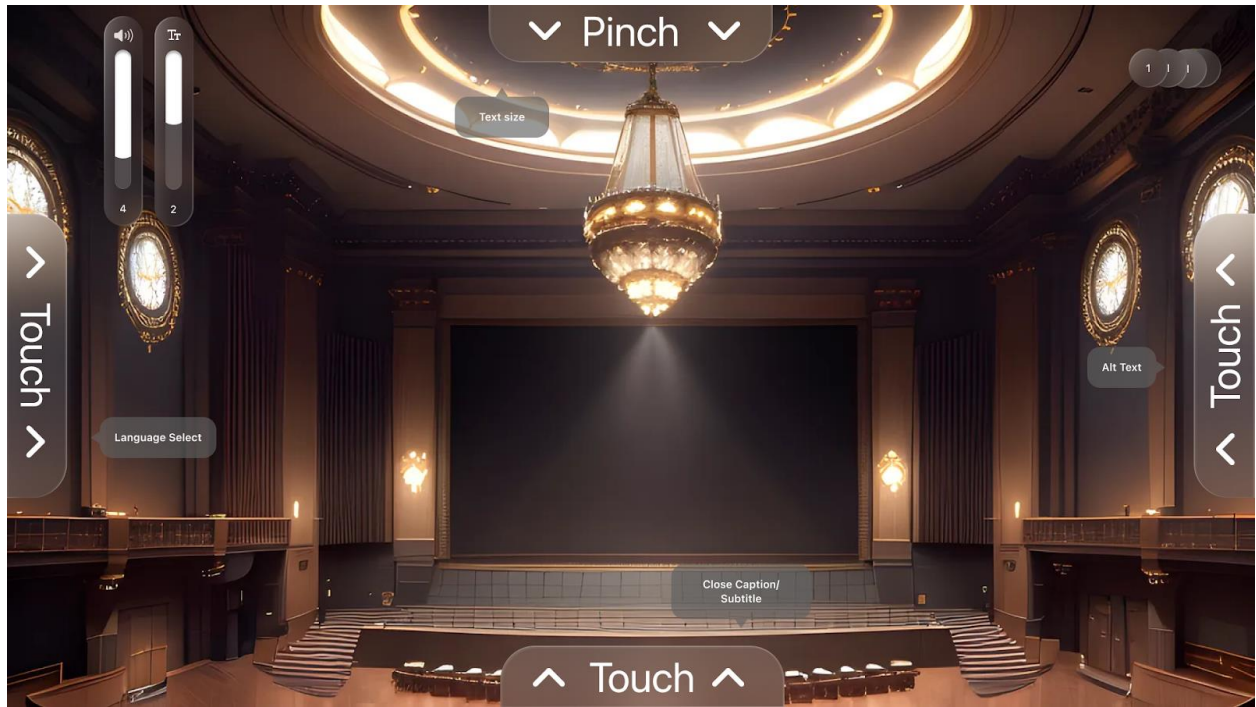
Tap/swipe left for language select



Tap bridge/swipe up for subtitle/speech bubbles



Tap/swipe right for alt text



Pinch to resize text or increase volume