trainAR Survey Analysis and
Future Prototype Considerations

Matthew Lawrence Christy
Sai Vandana Srinivasan

Drexel University: College of Computing and Informatics
INFO-890-901 - Capstone II / Spring Term 2022-2023
Dr. Andrea Forte
27 May 2023

Introduction and Methods

For the first iteration of our prototype, we decided to utilize the Wizard of Oz technique via a video prototype to present our proposed solution to reduce feelings of "gymtimidation." The video showcases a fictional app, "trainAR" that is composed of a combination of Figma-created UI elements, pre-recorded audio and video, audio overlays, and minor advanced graphics to highlight the AR features of the application that were all assembled into a six-minute video using Adobe Premiere.

We next created a brief survey with the embedded video that included qualitative and quantitative questions. We sent the prototype survey to all individuals who indicated they were interested in follow-up communications and exercises from our initial survey. We also posted the prototype survey to our social media accounts, fearing we might not receive enough responses from only individuals who agreed to follow-up communications. We let the survey run for approximately one week, and we received a total of twenty responses.

To remain consistent, we used similar qualitative and quantitative analysis methods as our first survey leveraging Miro and sticky notes to code the survey responses. This involved grouping survey responses together to establish common themes. The following sections will summarize our findings on the potential of Augmented Reality (AR) in fitness centers to reduce feelings associated with "gymtimidation." After our analysis, we will conclude our report with a brief section to discuss features and design modifications for future prototypes.

Findings and Analysis:

Considering that we included a six-minute embedded video, we wanted to keep our survey brief so that participants remained engaged. The survey included four open-ended qualitative questions and four quantitative questions to help us understand how people felt about using Augmented Reality in fitness centers to increase understanding and knowledge about exercising to reduce "gymtimidation." Our analysis will be broken down by question, as there were only eight total in the survey. We will begin by analyzing our open-ended qualitative questions:

Qualitative Analysis

Q1. Is there anything about the trainAR app that you don't like?

- Twelve participants said there was nothing that they didn't like about the app as presented.
- One participant noted that the app felt too cumbersome while working out.
- One response said they wanted more granular control of equipment and target body area of focus during workouts.
- One participant stated this was already integrated into a popular franchise gym's application, but we didn't see specific AR integration upon our analysis.
- The remaining participants used the question to suggest application features. (These were added in the following question (Q2))

Overall, 60% of all participants indicated that our initial prototype was well received.

Q2. Are there any features you would like to be added to the trainAR app?

- Six participants stated they felt no features needed to be added to trainAR.
- The remaining feature suggestions are pulled from Q2, as well as Q1 and Q3, where participants decided to discuss features in those questions. We noted which question these suggestions came from for clarity and information tracking.
  - Application Integration
    - Music. (Q2)
    - Nutrition. (Q2)
    - Biometric tracking for customization. (Q3)
  - Concerns about form
    - Modifications based on age/body type/difficulty/pain. (Q2)
    - Real-time feedback on form. (Q2)

- ○ Building workouts based on attempted workouts and body target area (Q2)
- ○ Newbie workouts
  - ■ Beginner routines. (Q2)
  - ■ Recommending weights. (Q2)
- ○ Alternative workouts - nonmachine-based workouts (location sensitive.) (Q2)
- ○ Interfaces could be more interactive. (Q1)
- ○ Toggle feature for voice. (Q1)
- ○ Animation instead of video to decrease viewing time. (Q1)
- ○ Gender-neutral category in setup. (Q1)
- ○ The input of weight and height before exercise is demotivating. (Q1)

A prioritization matrix of these feature suggestions will be included in the discussion of Considerations of Future Prototypes in the following section.

Q3. The follow-up to Wearables - Why or why not would this interest you?

- ● Five participants provided generalized responses about AR technology in fitness:
  - ○ Two participants said that it would be helpful to create a more fun experience and reduce anxiety.
  - ○ Three participants said that this experience would help reduce the learning curve.
- ● Six participants said they would benefit from using wearable technology.
  - ○ Three of these participants suggested using this technology specifically for form correction.
- ● Eight participants said they didn't want to wear or keep tech near/on them.

Q4. The more you say helps our project. Please let us know if you have anything else to say regarding trainAR.

- ● Six participants gave positive feedback with no additional comments.
- ● Six participants gave no additional feedback.
- ● Three participants reiterated feedback about app integration and form feedback/modifications.
- ● Two participants indicated that the app could potentially cause body dysmorphia or eating disorders.

- One participant stated they wouldn't use the app because they prefer in-person personal training.

These open-ended responses will be considered in the discussion of Considerations of Future Prototypes in the section that follows.

Quantitative Analysis

Next, we briefly show the participant's quantitative responses as pie charts. This area will have a little discussion as the visualizations highlight the information directly.

## Have you experienced feelings of "gymtimidation"?
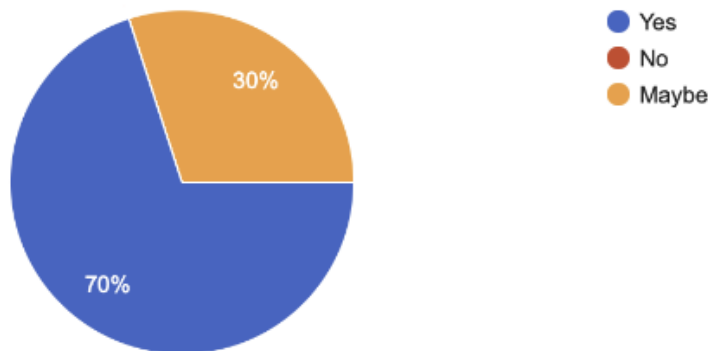
Q1: We created this question because we realized that not all of our participants were a result of our initial survey, as we also leveraged social media. We wanted to define "gymtimidation" and capture whether there was any change in what we had already identified.

Do you think the trainAR app would help diminish feelings of anxiety or fear related to lack of knowledge at the gym or fitness center?
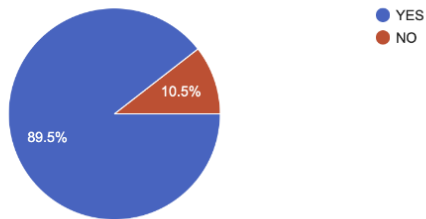

Q2: We received significant feedback from participants stating that they thought our prototype could help with feelings associated with "gymtimidation".

Would you want to use an app like trainAR at a gym or fitness center?
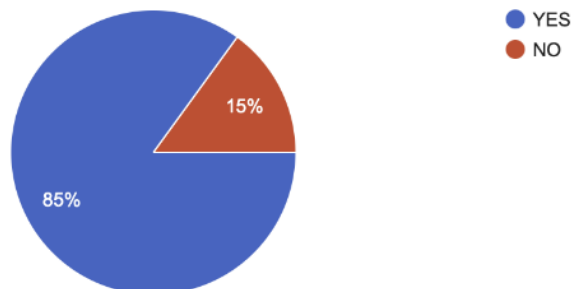
Q3: We received positive feedback from participants stating they would consider using our prototype in a gym or fitness center.

Would you be interested in experiencing the app using wearable technology?
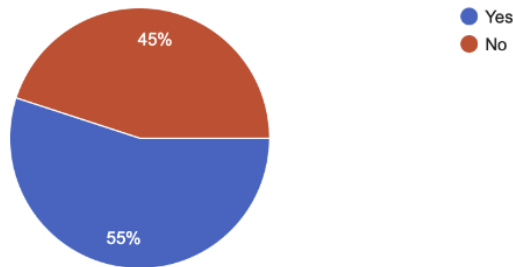
Q4: Participants showed that using wearable technologies in the gym for AR experiences was closely divided– almost a perfect split.

Considerations for Future Prototypes

Based on the feedback we received, we narrowed down the main feature suggestions and additions mentioned by the survey participants and created a feature prioritization matrix. Given our resources and capabilities, it is important to note that this matrix identifies the features that we, as a team, could tackle with future iterations.

Feature	Severity			
	Low	Medium	High	Already Included
Music	X			
Nutrition	X			
Biometrics				X
Form - Moditifcations based on Capabilities			X	
Form - Realtime Feedback	X			
Building Custom Workouts			X	
Beginner Routines			X	
Beginner Weight Recommendations			X	
Non-machine workouts (Alternative)		X		
Interactive Interface				X
Voice Overlay Toggle (On/Off)			X	
Animation instead of Motion Video			X	
Gender Neutral Selection			X	
Demotiviation due to Height/Weight Setup	X			

We categorized each feature suggestion using a "Severity Level." The levels are defined as follows:

- **Low** - Low prioritization; likely due to redundancy with other technology or apps, way outside of the scope of our project (AR in fitness), or because additional information is needed, possibly obtained through interviews where other data can be captured.
- **Medium** - Medium prioritization; should be considered at the end of prototyping as a "maybe" category.
- **High** - High prioritization; should be considered in the next iteration of prototyping, as the feature has a strong case for implementation.
- **Already Included** - a feature suggestion that is already included in our design.

If we went through another iteration of prototyping, we would attempt to implement the features in the High Severity category. Most of these features would be simple to implement, but also extend the app a little further to include those features that seemed reasonable and overlooked (e.g., turning the voiceovers on/off).

We felt a few suggestions were difficult to include in future prototypes, such as establishing gym etiquette and tackling body dysmorphia. These issues seemed out of scope for this app and focused explicitly on social problems.

One of the participants suggested using mirrors integrated with AR technology as a possible solution to form correction. We brainstormed this idea and discussed its viability and how we could make this solution less expensive and more feasible. One idea was to have the mobile app and machine working together to help users exercise. This could include embedded cameras or thermal scanners/sensors to follow a person's form and make suggestions and corrections via audio AR.

Another consideration that could be explored would be to abandon the visual aspect of the AR (scanning feature) and make it a completely audible AR experience based on RFID or geofencing technologies. The idea would be that as someone approached equipment or machines, the audio would automatically start to play to help them learn. This concept would be similar to audio tours in museums.

Both of these prototypes would reduce the need for a person to hold a device in their hand and negate using "wearable" technology, as these were two primary complaints with trainAR's implementation.