INFO-890-001 - Capstone II
Market Research Brief and Prototype Finalization

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Introduction

This brief aims to investigate applications, hardware, and possible AR solutions in the fitness domain currently in the market. This research aims to provide data and perspective on features that overlap our proposed prototypes. Additionally, it gives insight into features that were not considered initially. Finally, there is a brief discussion on how our proposed prototypes and their included features could help reduce feelings associated with "gymtimidation."

Market Research:

We researched existing applications and their features to provide insight into possible overlap with our proposed prototypes. We also wanted to highlight any features we hadn't considered in our prototypes and whether their inclusions would benefit our design. Specifically, we investigated aspects such as efficiency in terms of fitness, gamification, motivation, AR, and education. The following are a few applications that we reviewed with summaries of their features:

Applications (Mobile or Tablet devices):
- PokemonGo (Audio and Visual AR)
  - Game-based, encourages users to walk around.
  - Uses the existing environment for gamified elements.
- AR Runner (Audio and Visual AR)
  - AR creates checkpoints in the existing environment that runners must pass through at certain times.
  - Can be used indoors and outdoors.
  - Leaderboards for competitions.
- Plaicise (Audio and Visual AR)
  - "Transforms space" into a gaming environment.
  - Gamifies exercises into mini games (such as push-ups, lunges, squats, etc.)
  - Movements act as controls.
- Zombies, Run! (Audio AR)
  - Gamifies running.

- ○ Places you into "missions and challenges" to achieve movement/cardio goals.
- ● Gymnotize Fitness (Workout App)
  - ○ Track progress (reps, goals).
  - ○ Users can create customized workouts.
  - ○ Visual graphs, visual cues as to muscle groups being worked.
  - ○ Weightlifting guidance.
  - ○ Advertised as AR, but we found no AR implementations.
- ● Future (Workout App)
  - ○ Track progress - reps, weights, and goals.
  - ○ Custom workouts are created for you by a personalized coach.
  - ○ Audible cues from your coach for motivation and specific instruction.
  - ○ Automated cues from the application on how to perform an exercise.
  - ○ Visual cues through videos of people performing the exercise to help with form.
  - ○ Not AR.

We also researched existing hardware options that are currently on the market. We wanted to highlight those that were explicitly paired with applications and required a significant financial investment. Two were wearable solutions, while the other was a stand-in-place solution. All three offered features inclusive of augmented reality:

Hardware (with accompanying applications):
- ● NordicTrack Vault (Audio and Visual AR):
  - ○ Smart Mirror
  - ○ Provides instructions and visual feedback.
  - ○ Provides different workout types.
- ● Vuzix Smart Swim (Audio and Visual AR):
  - ○ Heads-up display that attaches to swimming goggles
  - ○ Displays stats, performance, and coaching instructions.
- ● Solos Smart Glasses (Audio and Visual AR):
  - ○ GPS to provide turn-by-turn navigation.
  - ○ Displays stats in a HUD.
  - ○ Specifically for biking.

Feature Analysis:

Upon reviewing the features within our market research, we identified the following to overlap with our proposed prototypes:

1. Gamification and Leaderboards.
2. Progress Tracking and Goal Setting.
3. Motivation.

4. Real-time exercise data.
5. Visual and audible cues on exercise execution or movement.
6. Heads Up Display (HUD) technologies in the case of AR.

The following identified features were not considered in our original prototype designs, and we feel that including them would be beneficial:

1. AR audible and visual demonstrations on how to execute an exercise or movement.
2. Closed Captions (subtitles) for the deaf and hard of hearing.
3. Tactile feedback - vibrations of when to start exercises, stop exercises, or advance through the workout.

We initially considered a Feature Prioritization Matrix to supplement this brief, but after evaluating our small set of features and assessing our capabilities and resources. We don't feel that prioritization vs. justification is necessary; therefore, we do not feel the matrix is needed. We understand and consider that more extensive projects, large sets of features and limitations, organizational resources, budgets, and time constraints could necessitate using such a matrix.

Proposed AR Technologies: Why ours is different.

Our proposed prototypes are focused on education and motivation to help eliminate feelings associated with "gymtimidation." We feel that including an AR solution to display exercises and movements in the equipment and space the consumer uses would help reduce "gymtimidation" by providing a more personalized experience. We also plan to include a gamification and motivational aspect. Gamification and motivation have been incorporated in apps such as Plaicise and Future; however, we have not encountered an app that effectively produces AR demonstrations with these features.

Our AR experience would include but is not limited to real-time visual and audible cues for weight machines, free weight movements, and smith machines. It could also demonstrate specific activities associated with stretching, yoga, and body and body weight exercises. This will facilitate an easy transition from what is being displayed on the screen to the user's performance. There are few wearable AR solutions for fitness currently on the market. Including these highlighted features with a HUD sets our prototype apart from what now exists in the market.

Our proposed final prototype design is an application and wearable AR glasses combination. We feel this could provide the best-personalized experience, negating having to manipulate a hand-held device during workouts. Furthermore, the HUD could project information, movements, and information in real-time, along with audible cues.

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