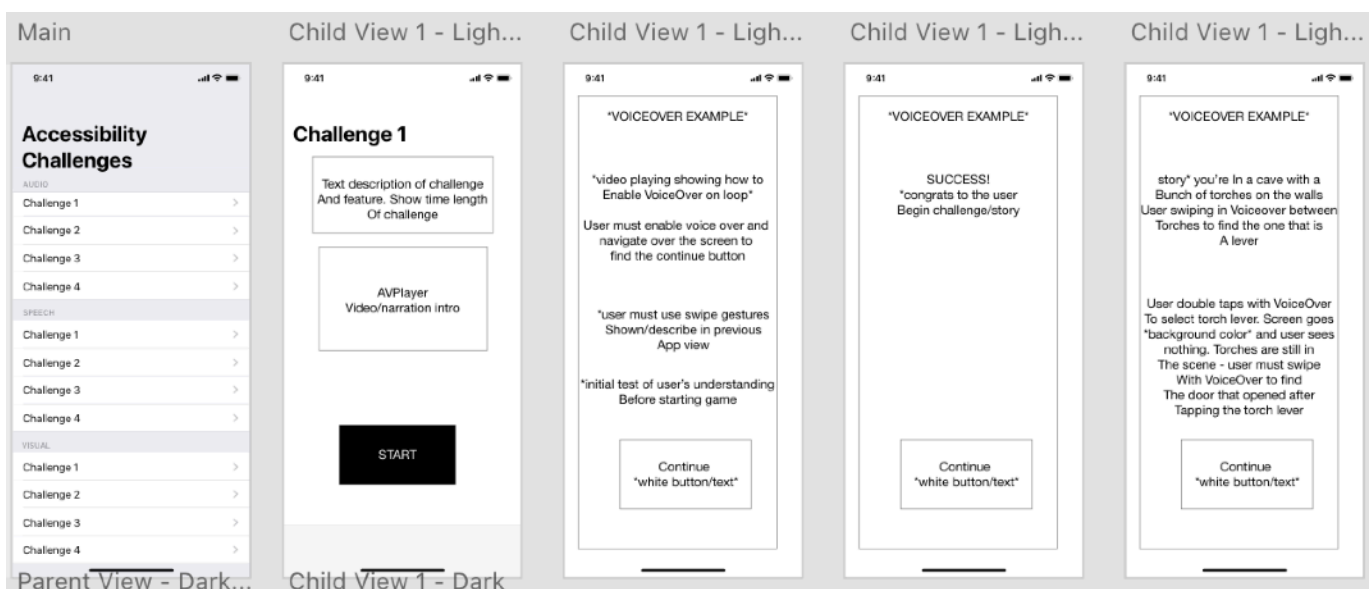


Homework 2

Idea 1: Accessibility Challenge/Game

1. iOS devices come with a multitude of accessibility features (such as VoiceOver, BackTap, assistive touch) that many users are unfamiliar with or are unaware of their existence. This application concept has the goal of gamifying accessibility education and with the purpose of furthering user knowledge on the features available to them. By creating challenges and a simple “gameplay loop”, users will need to determine which accessibility feature must be enabled and used to reach the next stage of the game.
2.
 - Notifications, consistent feedback (haptic/visual/sound), simple navigation, challenges/game, Dark/Light mode, audio playback, SwiftUI widget?
1. **Notifications:** ~ 2-4 hours (using notifications to bring user back into app when they leave to make accessibility setting change)
Feedback: ~3-5 hours (using CoreHaptic, etc. to make every tap and gesture have a response)
UI/Navigation: ~2-3 hours (create app layout and proper constraints for multiple devices. Have people (regular users/older users) test UI for verification of simple design)
Challenges/Game: ~10-20 hours (create multiple game paths that focus on teaching a subset of accessibility features. i.e. three challenges to teach a user how to enable, use, and disable VoiceOver)
Design/Theming: ~2-3 hours (use built in theming while designing layout – need to test for viewability issues when changing between light/dark modes)
Audio: ~1-3 hours (implement AVPlayer – record voiceover for narration in app)
2. Bluetooth (Airpods hearing accessibility), cameras (image recog/magnify), accelerometer(backtap), multitouch(voiceover navigation gestures), tactile-engine/speakers(feedback response).
- 3.



4.

1. iAccessibility – “podcast” app that discusses accessibility features. Limited interactions and does not go beyond providing information to the user – does not train and test knowledge gained like my app concept will do.
2. Various websites that describe accessibility features but are not web/ios apps. Had difficulty finding applications with a similar concept or goal of teaching these features through practice and challenges.
3. I work at an Apple Store and was inspired by an internal application the company created for training purposes and thought there were ways to improve upon it – make it available to the public. Ironically – I won’t be able to distribute or publish this (or any application) since I still work at Apple.

5.

1. General audience is intended to be “anyone”. However, a user would need to have the desire to learn about accessibility features – either out of necessity of interest in the topic. For example, users with worsening hearing/eyesight, new parents, children/adults with learning/sensory impairment.

6. Theoretically assuming I had the ability to publish the app, I would make it a free purchase with no ad support. In the future if there is demand and if accessibility features begin to expand, new versions of the app or an IAP could be set at a low price to allow for further development of the project.

The accessibility app would be great. It has a lot of risks, that a lot of games have, but I think this would be worth an attempt at for a final project. Maybe when you’re done working for Apple, you can publish it.

Idea 2: Augmented Reality Hygiene App

- 1) Last semester I started work on a prototype for a AR application that would help children learn how to brush their teeth. I would like to continue work on this application by creating a gamified experience that uses image recognition and timers to monitor the child’s brushing activity while also providing visual/auditory stimuli. Using the front facing camera (limited to devices with a truDepth camera), 3d objects/enemies could be placed around the user’s facial mesh. As the child brushes their teeth, these enemies begin to fade away and the battle is won.

2)

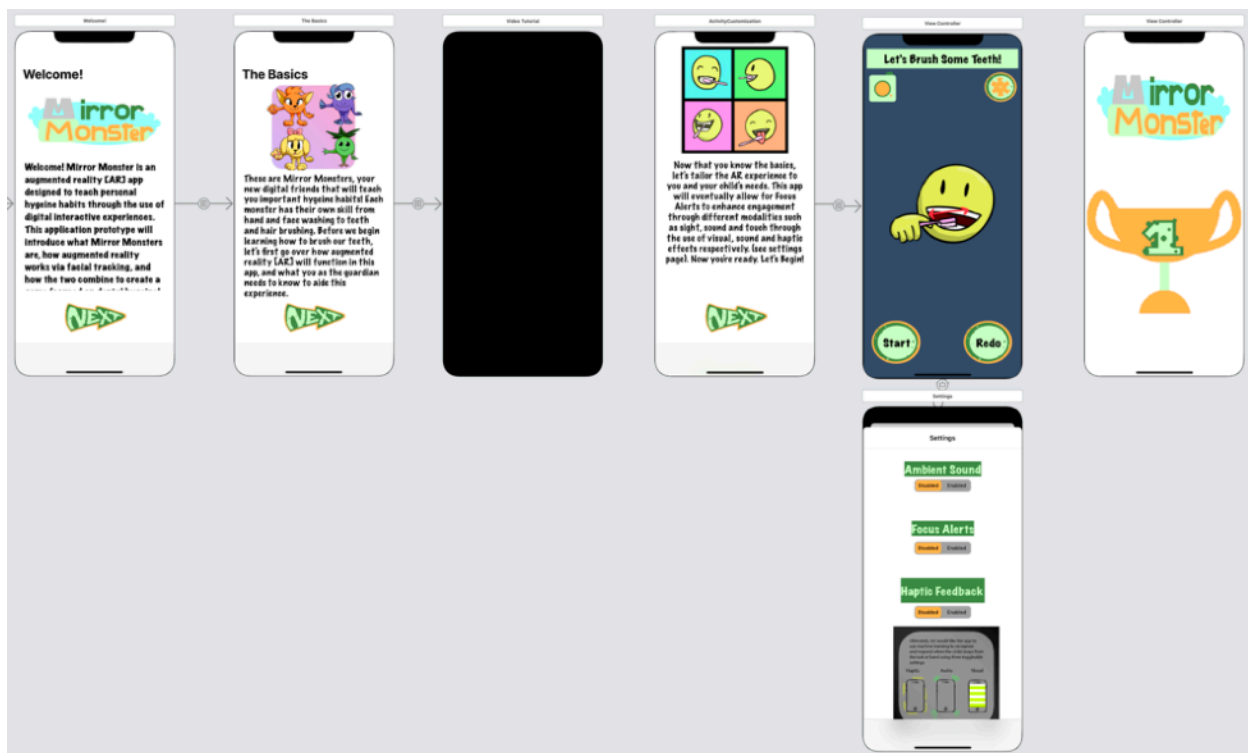
- Augmented Reality, Notifications, consistent feedback (haptic/visual/sound), gamified interaction, Dark/Light mode, audio playback, hygiene education
- 1. **AR:** ~10-15 hours (already have a foundation and resources available on how to implement facial tracking and overlay a mesh/mask filter i.e. snapchat. Would need to expand beyond this to overlay germs/enemies outside the area of the mask.
Notifications: ~1-2 hours (assuming this would be relatively simple, setup scheduled push notifications to remind users to brush their teeth in the morning and at night – according to app preferences and can be set to specific times)
Feedback: ~3-5 hours (using CoreHaptic, etc. to make every tap and gesture have a response. Success/lose sounds/haptics. Timer sound and visual).

UI: ~2-3 hours Simple app layout, tabbed app that has settings on right, education/tutorial on left, main AR interaction/game in center. AR experience is full screen within controls overlayed on image – tab bar will be hidden during interaction to prevent switching during activity. Implement Dark/light mode.

AV/EDUCATION: ~Record voiceover/narration instructions and sound effects, implement sound and video playback depending on activity in tutorial tab or during the AR interaction.

2. Using camera systems (truDepth) for AR, speakers and taptic engine for feedback response, multi-touch for interaction.

3)



Rough storyboard I've modified since ending work on this project. As previously described, the app would become a tabbed application that has an education section that is a scrolling view of videos/text, and the other tab would be settings for feedback/music/etc.

- 4) Colgate has an application called Colgate Magik that has a similar feature set. However, the Colgate application requires the use of a special toothbrush that needs to be purchased separately. My application would ideally work with any toothbrush and rely on a ML model to identify proper brushing.
- 5) Children learning how to brush their teeth, looking for incentives to complete the task. App likely installed on parents device and the brushing activity/app activity would be monitored by the parent. App would be limited to households that have a modern iPhone or iPad Pro since the truDepth camera would be required for front-facing AR.

This also would make a good final app and it seems like you've thought enough about it to understand where the complexities and risks lie, in building it out.

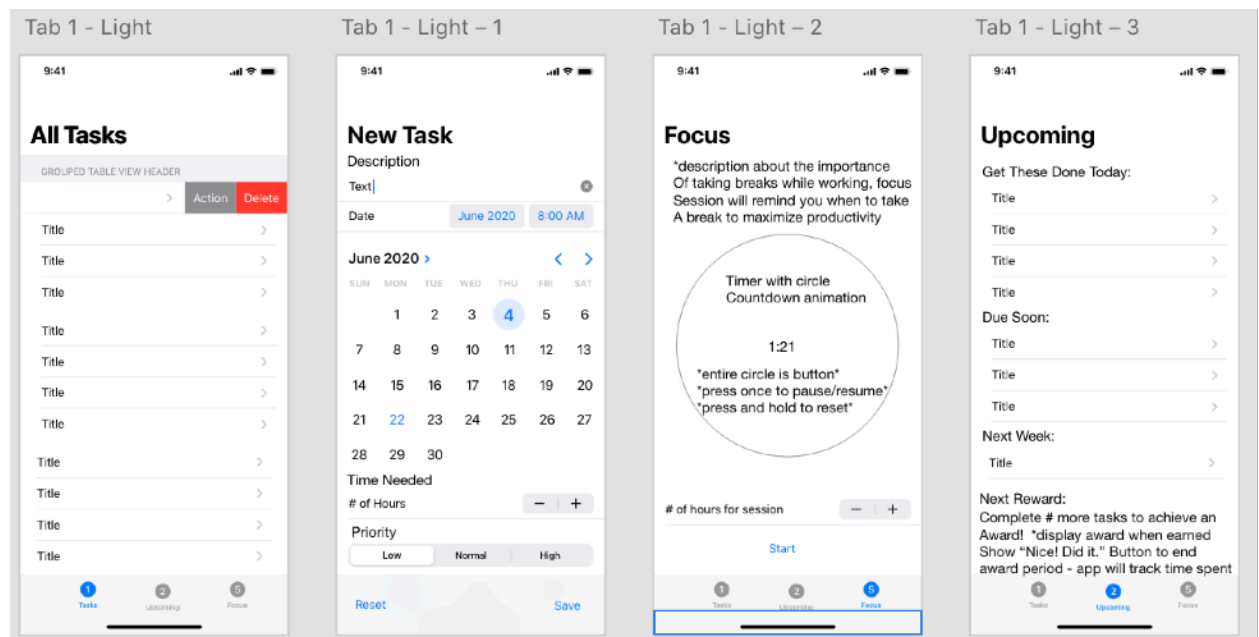
- 6) Free application to use, enable IAP parents to purchase different masks and enemy skins that can be utilized during the AR interaction. Skins likely \$.99-\$1.99 each.

Idea 3: Good Habits Tracker

- 1) To do application that rewards you when you complete a task. i.e. Finish an assignment and your reward is to play a video game or watch a movie for an hour. There are several apps like this on the app store, however, in my app the rewards would vary depending on how early you achieve them. For example, if you finish an assignment a day early and nothing is due soon, the reward suggestion will be “more premium” such as “go for a 2-hour hike” or “play through the next # of levels in a game”. The application would be aware of future events and suggest rewards when the user is “caught-up” on their tasks. When the user completes an overdue task, the app suggests a 10-minute focus break and could launch a brief “meditation/focus” interaction.
- 2)
 - Task tracker/to-do list
 - Gamification of tasks – reward system
 - Intelligent planning – uses scheduled events and creates a buffer period of free time between each planned productivity period to complete the task
 - Ability to set a timer for a task and be reminded when to take breaks to enhance focus
 - Save to database (firebase?) and allow access to tasks from the web
 - ^would require an account
1. **Task-tracking:** ~3-5 hours to create table view and CoreData entities, create logic and UI for handling task completion and creation. Allow for file/image attachments, due-date, expected time-to-completion.
Reward/Intelligence System: ~8-10 hours, create a system where users can create or choose from a list of rewards of varying time-usage. Create scheduling system for when to plan tasks and reward breaks during a productivity “session”.
UI: ~2-4 hours, create Tabbed application, one tab is a table view of all current tasks, other tab leads to “focus/productivity session” where a timer is set and the app will periodically alert user to take a rest break and walk around for a few minutes.
WEB/FIREBASE: ~5-10 hours, unsure of how long this would take since I have limited experience with webapps. Would need to use angular or react to create app and link to firebase database for storing tasks and rewards.
2. Database (firebase) for web app access and storage. Utilized for account creation/sign-in. Camera for adds images to a task. Used network to access database.

This too would be sufficient for a final project. You’ll want to focus on the mobile side as much as you can, but this would definitely have plenty of technology to make a good final project. Even though there are a lot habit apps, this would be good if it was geared towards teenagers some how, or some demographic around that age since most of the other ones are pretty generic when it comes to age.

3)



- 4) Habitica, free app but offers IAP and subscription to support developer. App is a task manager that rewards the user's avatar achievements/materials/quests for completing a predetermined task.
- 5) Target audience aimed towards students in middle/high school that need extra incentive to complete tasks, and for adults that are motivated by gamified activities.
- 6) Free application supported with apps (no apps in productivity session view). Offer one-time IAP to remove ads for ~\$4.99.