PhotoBall

1. App Overview

This app will take images of line drawings from the device's camera and generate a map based on that picture. Afterwards, a simulator of a ball bouncing through the environment will run which shows that the ball interacts with the generated environment. There will be a selection of base images to choose from.

The purpose of the app is to utilize user creativity for unlimited content. The premise of map generation can be later used in future apps. The chance of success is medium to high because it is a simple enough concept for easy entertainment without being too complicated for users.

2. App Type

This app is an entertainment app. It is not intended to make money, but it is not service-oriented at all. From a developer perspective, I think it would be an interesting thing to implement and create. The main need this app addresses is the lack of organic apps in general. Rather than rely on the app on map generation from an algorithm, this app benefits from user-drawn content. Of course, the image will be encoded in bytes, but the app combines technology with creativity in an interesting way. Users of the app will probably be artists or people who are interested in the concept and want to see if it really works.

3. Major Features

Image storage – The app will keep track of the generated maps created from images.
Simulator – Once a map is chosen, there will be a place in the app to begin the simulation.
Picture Taker – The app will access the camera to take the picture to eventually be used for map generation.
File loader – Users can load the map file type into the simulator to then be run again.
Ball Customization – Users can choose from a group of ball presets.

4. Assumptions and Dependencies

The app will utilize the camera functionality. Furthermore, SQLite will be used for data storage. I will have to learn how to use the camera, conduct image analysis, and simulate a ball moving in an environment. I also will need to learn a way to analyze images and generate a map. I already have experience with SQLite, and I have had some experience with UI design and testing, so I will leverage that to my advantage. I may need a third party tool for a physics engine of some kind, which is a common need as discussed in class. A model of a sphere for the ball may also be needed, and I do not think I will need an API, though I have no knowledge of what API would be useful.

5. Scope of Initial Release

By the end of the semester, I plan to have an app that can take an image and generate a map from it. There will be images stored in SQLite, and users should be able to change the color of the ball or select from some list of presets. Camera access and image generation are a necessity. The largest part of the scope and the biggest risk comes from the image analysis and map generation, and the second largest part of the scope is the ball operating in the environment, so there is some room for discussion as to how the map is used once generated.

6. Scope of Potential Future Releases

Multiple wall types could be added where colors are recognized by the camera and generated differently. The simulation could later be reimagined into a game that is played where the map generated acts as the combat zone or something similar. I do not expect to release the app to the Google Play Store, but I may use the concept in a future app.

7. Operating Environment

Most, if not all, of the data will be stored on the Android device. If there is enough time, adding a SQL database backend for storing the images would be nice, but I do not think there will be enough time to add much external support. The user of the app will have to have something to write with and on to make the map, so that is something else to consider.

8. Competitive Analysis

JPL created similar map generation technology with the Mars rover based on the images sent back from the planet and the Microsoft HoloLens, but in terms of apps, there are few that I could find. ProD&D Dungeon Generator has between 50,000 – 100,000 installs, but the app is for creating dungeons not for simulation or making maps based on a picture. The app does require camera permissions, however, so further inspection may reveal some map generator. This app targets D&D players to create maps, and my app does not have this goal. Another competitor could be Instagram with their face recognition technology; they overlay animations on top of the users face based on the camera, but my app would focus more on map generation for the simulation of a ball in an environment rather than looking at a face.

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UT Landmark Scavenger Hunt

1. Overview of the App

        In this app, users will participate in a scavenger hunt across UT to see the exciting landmarks across the campus. Players will be given information about the landmark once they successfully find one. The purpose of the game is to teach users about the UT campus in a fun and exciting way while also showing users how much there is to appreciate about the campus.

        I believe this app will succeed because it is a simple and fun concept that provides a service for all the visitors UT receives. There is a guaranteed user base in the app, and it will result in people learning about the campus in a very interactive way. The app also has the possibility to expand to the places around UT and could encourage people to try things all around Austin at some point.

2. App Type

        This app is service-oriented and intended to be a fun learning experience. It addresses the lack of interactive learning with technology that our current campus tours have while also not replacing the tour. In fact, it can complement the tour as a guide takes people across campus. Likely users are kids as well as students of the university playing the game for the first time. Unfortunately, people will not be very likely to play the scavenger hunt multiple times, but there are always first-time visitors to the campus.

3. Major Features

- Map Page – View the current area and see how many landmarks you have found so far. This is the main page of the app where a circle on the map shows the vicinity of a landmark or where hot/cold is shown.
- Difficulties – Users can choose from Vicinity mode and Hot/Cold mode. Vicinity mode is the more forgiving mode, because hot cold mode will tell users when someone is getting closer to the landmark without showing where the landmark is on the map until you are there.
- List of Landmarks – Users can access a list of all the landmarks on the campus that are in the scavenger game. Further resources that link to websites would be displayed on the information for those landmarks the user views.
- Landmark Information – When a user clicks on a landmark from the landmark page, information will be displayed about the landmark if the user has been to it.

4. Assumptions and Dependencies

        Google play services will be utilized for the map as well as location, and SQLite will be used in order to keep track of player progress. The most important thing for me to learn in regards to this app is using the map features and location functionality of Android. Geofences may be useful when playing in Vicinity mode, and Hot/Cold mode may work with geofences

hidden from the user. I already understand SQL and have had some experience working in SQLite as well as with progress tracking. The biggest support will come from using Google Play Services, but third party progress tracking frameworks may be helpful when building the app.

5. Scope of Initial Release

By the end of the semester, I will have an app that allows users to play a scavenger hunt game based on the various landmarks around campus. Users will be able to access information about the landmarks they have seen as well as track how many they have seen so far.

6. Scope of Potential Future Releases

As mentioned in the App Overview, adding locations of things around campus besides landmarks would be make the app farther reaching for the UT student community. Activities around Austin may even be more interesting, or maybe some more detailed information on the various buildings around campus and their particular history. Future releases would also need to update any changes to the landmarks around campus such as the addition of new statues.

7. Operating Environment

All of the information for the app will stay on the device. The game will probably be only played at UT, and the information is not important enough to store on a server somewhere. Luckily, that makes the app less dependent on other services besides Google Play Services.

8. Competitive Analysis

An app known as SeekNSpot –Scavenger Hunt on the Google Play Store allows for custom created scavenger hunts as well as provides some YouTube video integration and more variety. The scope of the UT app will be much smaller and focus more on teaching visitors about the campus and its landmarks. There are landmark apps also available on the store, but these apps are not about UT nor do they seem to focus on looking for them. SeekNSpot has 1,000 – 5,000 installs, and other apps I looked at had under 1,000, so this market is not a very large part of the Google Play Store.