

Capstone Project

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1 Game Idea

1.1 The Problem Statement

Since we had selected the entertainment section and were acquainted with Jordindian and their Youtube channel in the process. We decided to go with our favorite Jordindian song "Smoke shisha Play fifa" as the theme of our game.

2 Wireframing

2.1 Deciding the concept of the game

We approached a frontal based running approach since interaction of the model from the back would give a similar feel to all the mobile running games we have played. The controls would be suffered and the user would be new to this type of gaming but the user can clearly view the faces of the model which would be a better approach.

2.2 How will it work?

Many of ideas we had were scraped since most of them required either scripting and sometimes the SparkAR studio would not be able to handle multiple inputs.

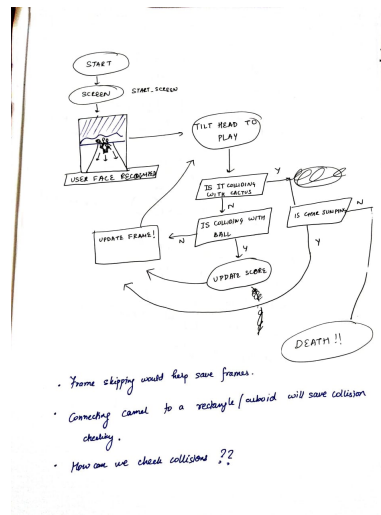


Figure 1: Game Logic Idea

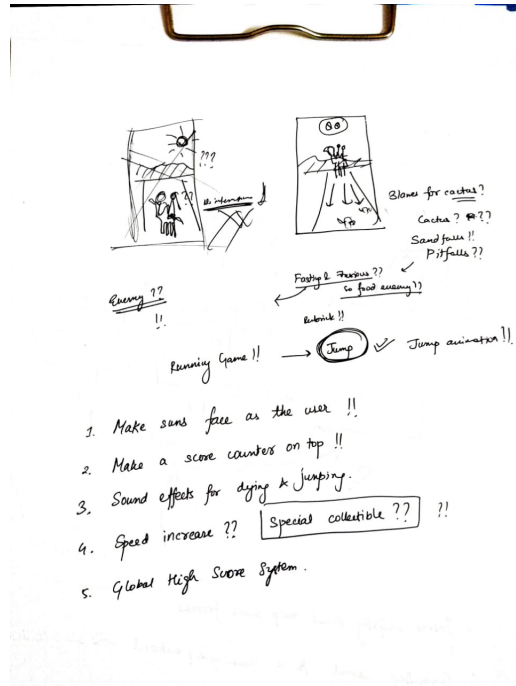


Figure 2: First Ideas we came up with

3 Alpha Stages

We tested for a balls collision in the alpha stages which we got pretty good feedback for with almost 32 fps on the simple game. We also put in the jump animation for testing with this alpha stage. It was well received by many alpha tester we had handed over to.

3.1 What we are leaving out?

- Sun as the user's face: It would take up more than 50% as non intractable part which would violate the Instagram filer guidelines.
- Sound effects for dying and jumping: Layering multiple audio files with logic produces a lag in the patch editor.
- Speed increase: We decided to scrape off the idea since there were no available method for a script to understand frame skipping since asynchronous programming will experience delay depending upon the amount of processes it has to do with SparkAR's own visual updating.
- Uploading High Scores: We needed to have a backend to obtain scores. It can be achieved with a simple free server with NodeJS but we decided

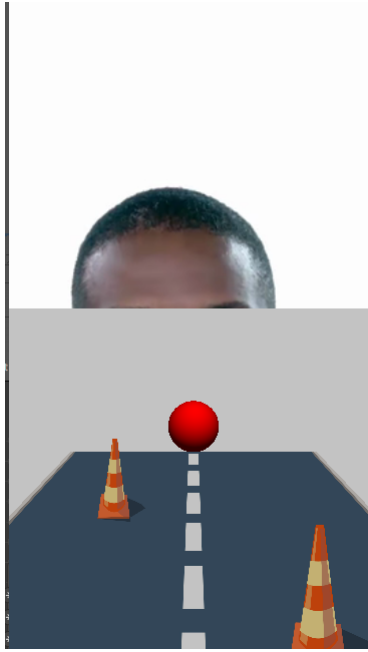


Figure 3: Alpha Stage with a Ball

to skip on it due to time constraints. This might also invade the users privacy even further.

- Jump animation: We decided to skip it since the frame rate would drop even further and the gameplay mechanics were set already.

3.2 What we can suggest to future developers?

- Developing a standard game logic without scripting is extremely hard in SparkAR.
- There is no help with documentation regarding SparkAR since it just uses JavaScript. Most of the tutorials on scripting are bare minimum or just lists out the variables which can be exported with each frame in SparkAR
- Patch exporter easily crashes on layer changes of objects.
- Making a 2d game while using 3d assets really took a toll on our game. Try to use 2d assets as much as possible.

4 Game Logic

The following section contains the technical description of the capstone project (i.e Patches, Assets, Scripts) used in order to complete this capstone project

The entire Capstone project is made with 95 percent of patches and 5 percent with the script.

4.1 Patches

Logic:

- And
- Or
- Not
- Equal
- Equal or less
- Greater than

Interaction:

- Screen Tap
- Face Tracker movement
- Object Tap

Utility:

- Switch
- Pulse
- Value
- Counter
- Pack
- Unpack
- Random
- Clamp

Animation:

- Loop Animation
- Animation
- Transition

4.2 Script

Script is used Mainly for start screen and score update.

```
const Scene = require('Scene');
const Patches = require('Patches');
const TouchGestures = require('TouchGestures');
const sceneRoot = Scene.root;
const directionalLight = Scene.root.find('directionalLight0');
var counterNumber = Scene.root.find('number'); //number is your textbox name where you want to show a score
var scoreNumber = Patches.getScalarValue('score'); //score is name of a number text which count your score

// How to access class properties (uncomment line below to activate)
const directionalLightIntensity = directionalLight.intensity;
counterNumber.text= scoreNumber.toString();
// How to log messages to the console (uncomment line below to activate)
Promise.all([
  sceneRoot.findFirst('strat_screen'),
])
.then(function(objects) {
const base = objects[0];
base.hidden = false;

TouchGestures.onTap().subscribe(function (gesture) {

  base.hidden = true;
  Diagnostics.log('tap gesture detected');
});

});
```

Figure 4: Script

4.3 Assests

We Designed Customed model for this effect.

4.3.1 3d Models

- Camel : The camel was imported using cgtrader
- Cactus : A handmade model using blender
- Football : A handmade football and a picture
- Background :
- Desert track : A handmade model using blender
- Naser and Vineeth : We used the models provided to us in our starter kit.

4.3.2 Audio Files

- Starting music: It was made from the last part of the "Smoke Shisha Play Fifa" song.



Figure 5: Cutomed Designed camel with characters



Figure 6: Cutomed Designed Cactus

5 Reactions and Future

5.1 What the user feels?

Most of the users had great responses but everyone felt that controls are a bit weird and the object collision does not work properly. This is the issue with the patch editor which we never addressed as it was a part of the game and the slow pace was simple to control. A user suggested addition of a counter

meter before the start of the game but we also discarded it. One of our alpha testers recommended we increase the play screen area so that they could relate with their nose as the character's position which we did implement on the final product.



Figure 7: A proud user

6 What we look towards for this in the future?

We would like to implement all of the ideas we had left. In addition to that we may add in a counter meter before the start of the game. We would also like to add in an extra collectible such as an oil barrel which can convert the camel into a car just for 3 seconds and which runs at faster speeds while the user collects the footballs. We would also like to add in a story section to the game and hidden collectibles which you can access after obtaining some achievements. A minimap of the next row of cactus on the bottom left would be really good for people to plan out their strategies or get ready to tilt their head in a particular direction.