



# Banana hunt using Augmented Reality

Suryansh Singh, Shourya Gupta, Saurabh Verma, Shivani Chaudhary

Student, IMS Engineering College, Ghaziabad, Uttar Pradesh

## ABSTRACT

*This project shows a creative and interactive approach to the familiar scavenger hunt game. In this users will hunt for an object (banana) hidden in the real world environment using the camera of the device. Once the user starts the application then he/she see the banana rendered around them then they need to capture all the bananas in this minimum time. The main focus of this application is to provide user better interaction with the environment in the game. This is also a type of crowdsourcing application in which user can add their own map at any location. It not only provides entertaining activities within an environment that players can explore, but the AR contents can serve as an educational tool.*

**Keywords**— Banana hunt, Augmented Reality, Game, Scavenger hunt

## 1. INTRODUCTION

A scavenger hunt (banana hunt) is a popular game in which a list of objects (bananas) are rendered around the user. When the individual finds the object then he/she comes closer to the object then he/she can capture the banana. User can capture banana in less time to score more points

While scavenger hunts are fun to play, it has simple default maps that are saved for the user that they can use in starting, but this game is equipped with the logic that they can create their own map and share this with other users.

This project explores an innovative approach to the banana hunt game by developing an iPhone application, SCAVENGER HUNT, with Augmented Reality (AR) capability for the users to play the game. User can create a map at any location and add this to the database so that it can be used by other players.

The expression augmented reality most commonly appears in conjunction with the term app, the clipped form now used as a popular variant of the word application and used in the context of 3G mobile phones and other handheld electronic devices. A notable example of an augmented reality app is recognized, which links face recognition software to social networking profiles. This means that you could simply capture a person's image in your mobile's viewfinder, and potentially have access to their identity, contact details and a range of personal information. This might all seem a bit spooky, and indeed there have been mixed reactions to this kind of use of augmented reality, which raises worries about privacy and data security. Developers argue however that information can only be made available for people who choose to register their details, and those who do register will be able to make decisions about what level of information is made public.

Though undoubtedly very useful as a tool for getting instant information, there are certain contexts where the use of augmented reality is deemed to be inferior to real-world interaction. Some people argue for example that AR can never be a substitute for a tour guide who, as well as providing information, can inject a real sense of inspiration and enthusiasm for the places they are describing.

Augmented reality is a technology that refers to the use of computational displays to add virtual information to a user's sensory perceptions. People can perceive entirely computational components and objects within the real world experience. For example, people could read the reviews of the restaurants that they pass by as they walk down a street, user can see the direction to a place in the real world on the map, visitors could see additional information in multimedia form of special exhibits in a museum, machinists repairing a broken piece of equipment could receive instructions highlighting in real time what to do next, firefighters could see the structure of a burning building to avoid invisible hazards on the scene, and it can be used to demonstrate the instruction to set up new product like furniture's.

According to a survey of augmented reality, an AR system has the following properties:

- Combines real and virtual objects in a real environment;
- Runs interactively, and in real time; and
- Registers real and virtual objects with each other [1].

In this project, a mobile platform, specifically Apple's iOS, was chosen for the game due to its popularity and portability. The objective of this project is to introduce an innovative and fun way for anyone who wants to organize a scavenger hunt game. The SCAVENGER HUNT (banana hunt) mobile app is accompanied by the feature that anyone can create an account and create their own map and share with others, this gives the user more flexibility to create map near their location.

As each object is located by a player at a location of their choice, user can share it with their friends near them, the SCAVENGER HUNT mobile app will show capture button to user when they come closure to the banana showed over the camera and then they can capture it, and faster they capture all bananas better will be the score.

The goal of this project is to increase user involvement by using a familiar and enjoyable game as a basis, and adding an educational dimension by incorporating Augmented Reality technology and engaging and interactive multimedia to provide users with facts about the objects (Banana) that they have located.

## **2. LITERATURE REVIEW ON AR APPLICATIONS**

AR applications are changing the way educational content is offered, helping to improve classroom learning through interaction. Augmented reality animated content using the simple mobile application in classroom lessons could catch students' attention in our dynamic day and age, as well as motivate them to study. Adding extra data, e.g. a short bio of a person, fun facts, historical data about sites or events, visual 3D models, would give students a wider understanding of topics.

By introducing Augmented Reality into lessons teachers are able to involve students in the process with 3-dimensional models. It can be just a part of the lecture, like a teaser in a movie, or the support of the important topic with extra info from a different perspective. Like this case, when a Canadian tech company CASE changed the wall of the school gym into a ball game by adding Augmented Reality(AR) layer to it. Students through balls onto a wall to hit floating shapes and so have fun physical exercises.

### **2.1 Comparison of your Application with existing applications in the market**

Till now there is no existing game like banana hunt, but there is similar application i.e. Pokemon Go, but the thing that we did extra in our application is that user can add their own map at any location and share this will friends, In Pokemon go we have random objects that get rendered at any location and this is causing many accidents also since these objects can be rendered on the busy streets and user don't care about where they are they just focus on playing game and this leads to many accidents in the past, but in our application user can create their own map by dropping the banana at a location, hence reducing the accidents and also allowing much flexibility for user to play game.



**Fig. 1: Pokemon Go interface**

## **3. THE PROJECT DESIGN**

In this stud, a mobile game prototype was designed to explore learning opportunities through an orientation activity in a university environment. The research design involved the development of the general architecture and implementation of a prototype built upon the game scenario. Features of the prototyped game such as "map-navigation" and "hunting the banana" were selected to be fun and engaging for users.

This AR scavenger hunt project was designed to create technically augmented scavenger hunt games that could be used by individuals, departments, or organizations to provide an innovative approach to playing the scavenger hunt (banana hunt) game with an educational purpose. Consisting of the mobile application, BANANA HUNT in which user can start quick play by simply clicking on the play button on the home page. In the application by default, there are some hardcoded maps but the user can create one for themselves at any location.

The scavenger hunt proceeds by the SCAVENGER HUNT mobile app displaying a list of objects (bananas) for which players will search around them. These bananas are rendered around the user hence he/she can view that by looking through the camera around them. When a banana is captured then it becomes bur to show that it's captured. User needs to capture all the banana in minimum time.

This project was developed using an agile development methodology based on Extreme Programming. That means the development process was both incremental and iterative with thorough testing and frequent delivery of working software. The project was broken into four two-week iterations. The first iteration focused on the basic design of the application. The second iteration was for creating an authentication feature and user details. The third iteration then added the augmented reality functions

like rendering the object(banana) around the real environment.[1] The fourth iteration added the feature of adding custom map i.e. user can create their own map and store this in the database. This agile development approach has been adopted successfully by the authors.

### 3.1 Enhancement made in the applications

One of the major problems of the Pokemon goes game is that it renders the object at random position and hence it can render the object on a busy lane or someplace which is dangerous and hence causing many accidents and deaths in the past. Hence we tried to reduce this in our application, what we did is that in our application the object will not be rendered at random position but user can create their own map by simply dropping the object near them, this will be done using their camera and hence the maps that are present will be safe to play hence causing fewer accidents, this feature also provides much more engagement with the users.

## 4. THE TECHNOLOGIES

One feature of this app is that it provides users with the ability to see augmented multimedia content around them. The implementation requires two major technologies: mobile application development (react native)[2] and Augmented Reality (AR Kit). In addition, it also requires a database and an application server for information storage and retrieval.

PostgreSQL was selected to address the database needs. Nodejs was used to connect to the database and retrieve information[3], as well as to insert information. React native is used to develop a hybrid mobile application using Javascript. We use three.js to render the content over the real-time environment [4]. Since the design is based on a three-tier architecture, a Nodejs script running on the server was used for storing and retrieving data to and from the web server while SQL was used to communicate with the database. To ensure the scalability of Scavenger Hunt, all data was stored in a Postgre SQL database [5]. We using the Heroku to host the server online [6]

## 5. CONCLUSIONS

The application allows much more interaction from the real world environment while playing the game hence allowing the user to experience more while playing the game. The feature of adding custom app allows this application to have crowdsourcing hence allowing much flexibility to the application, hence this application is not restricted to any particular location.

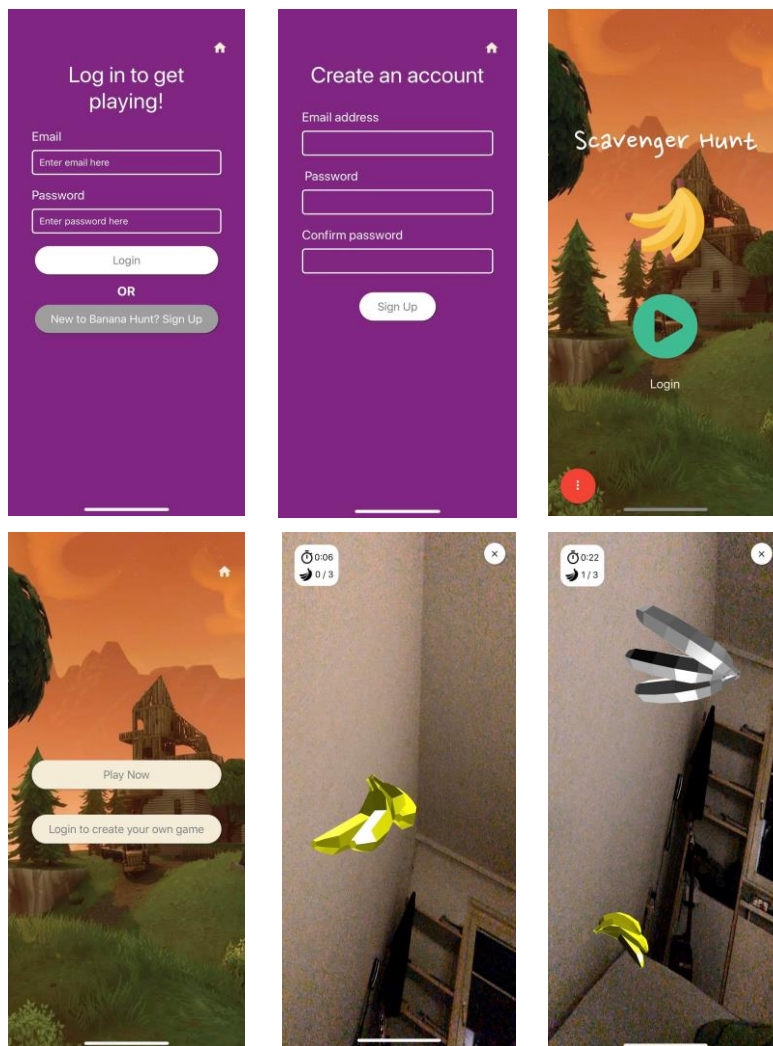


Fig. 2: Output results

## 6. REFERENCES

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