

Project Overview



Developed by Team Hackerbird

A mobile Mafia/Assassin type game played across a college campus, where players must work together to identify a Hacker using clues from AR objects located at specific GPS coordinates.

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Game Overview

Goals

Play as either a Hacker or an Officer. As a Hacker, you eliminate all other players before the time runs out. As an Officer, you work together with your fellow players to vote against a suspect to eliminate the Hacker. All Officers must decide on one player to eliminate to have their vote go through. If they eliminate the Hacker, they win. Else, if the Hacker eliminates all the Officers, the Hacker wins.

Mechanics

This game is for a group of 5 to 7 players. When the Hacker is within 20 meters of an Officer, a button will appear to notify them that they can hack and eliminate that player. They press and hold that button to start the hacking process, which takes around 5 seconds to complete. During this process, the location of the hacked Officer will be marked on the map, and the location of the Hacker is saved.

In order to vote, Officers swipe left to open a new menu, and then select a name from a list of all players. They can change their vote any time within an hour before their vote is counted and set. If they vote for the wrong player, they can accidentally eliminate their teammates.

Math

Players will be physically walking around to move in the game. Their locations are tracked by GPS. They can use other tools or technology, such as Messenger, to communicate and help them identify the Hacker. Through the app, players can view the in game scene and will have access to interactable objects that they can use during gameplay. Players point the phone downwards to open a general map of the area, with key locations marked. Players pull their phone up to view the augmented scene and interact with objects.

Introduction

What is reality if society resides in the illusion? In a polluted world, people of a cyberpunk society escape their reality by spending all their time in an AR, perfect world. However, someone recently spread a virus to cause a massive wake-up call and bring all of society out of their delusion.

Hacker is a location-based AR game built for a group of 5 - 7 friends and is meant to be played on a college campus. One player is a Hacker and the rest play as Officers. The Hacker's goal is to eliminate all the Officers, and the Officers vote to eliminate the Hacker. This strategic social game is a combination of **Mafia**, **Spyfall**, and **Assassin** recreated as an augmented reality mobile game.



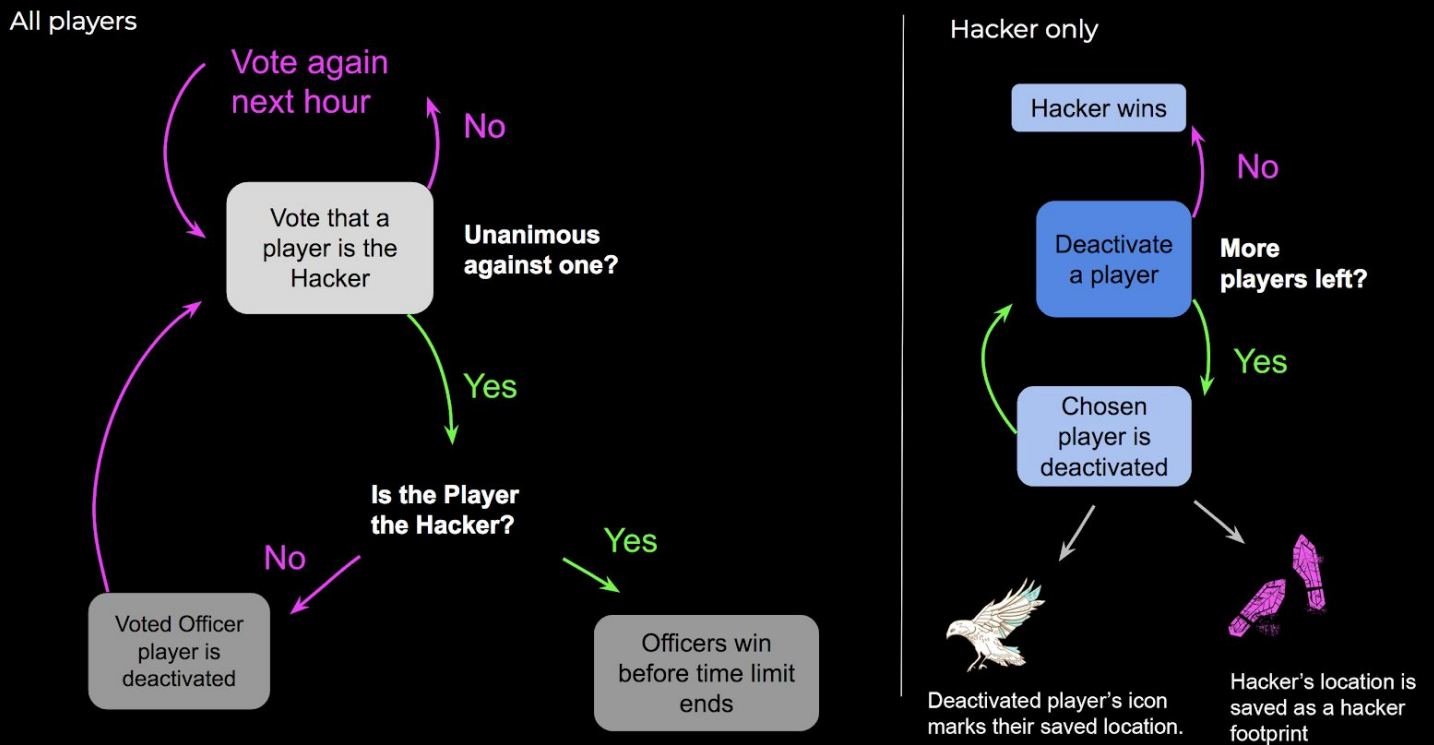
Through collaboration and using both social media apps and AR objects found on campus, the Officers have to vote together against a suspected Hacker before the Hacker eliminates all of them. At the end of every match, the in game world shifts, depending on which side wins. These visual changes persist and compound between playthroughs, creating an ever changing environment.

Hacker is geared towards college students and is currently being developed in Unity 5 for iOS device, with plans to develop for Android after AGP. We want this game to be on iPhones to maximize our market by using a highly accessible and already established mobile platform.

We made this game to bring friends together in real life. Everyone can play regardless of gaming experience or fitness level. It will be free to play, and gameplay difficulty will stay the same for new or returning players. We hope to deliver a gameplay experience that is both exciting and humorous, making it memorable for old and new friends alike.

Gameplay and Key Features

For 5 players (6 hour time limit) to 7 players (8 hour time limit), played real time.

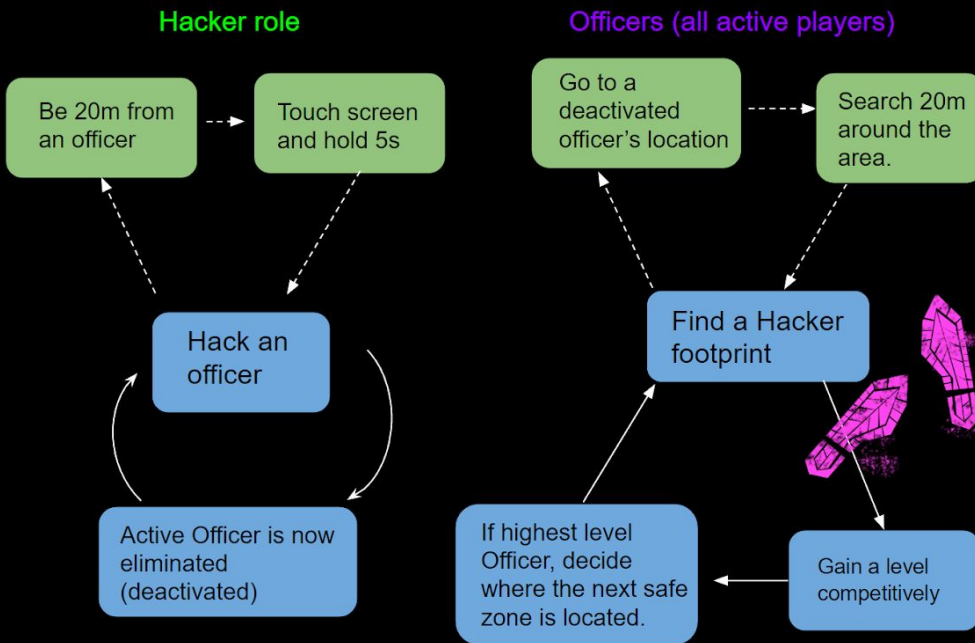


3 player roles->

- **Hacker** - Eliminate all of the players from the system before the time limit (6 hours for 5 players), or they will lose.
- **Active Officers** - Survive or Identify and report the correct Hacker. If the reported player is not the Hacker, that player is eliminated. Officers then vote again. Eliminated players become deactivated:
- **Deactivated Officers** - Succeeds if the active officers succeeds. Give boosts to the right player to help your team win!



Core Loop - collector's and leveling incentives



Progression Loop

Overall structure

Hacker Wins

Hacker: the AR world shifts towards post-apocalyptic reality. Get an icon.

Play a match

Officers: the AR world shifts towards a deeper nostalgic illusion. Get an icon.

Officers Win



Early Map Prototype



The Map: Key Features and Game Setup

At specific GPS locations, players open AR scenes distributed across the map:



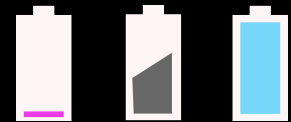
Footprint

This symbol marks the last known location of the Hacker.



Deactivated Player Icon

This collectible marks the location of any eliminated Officer. Its appearance is customizable.

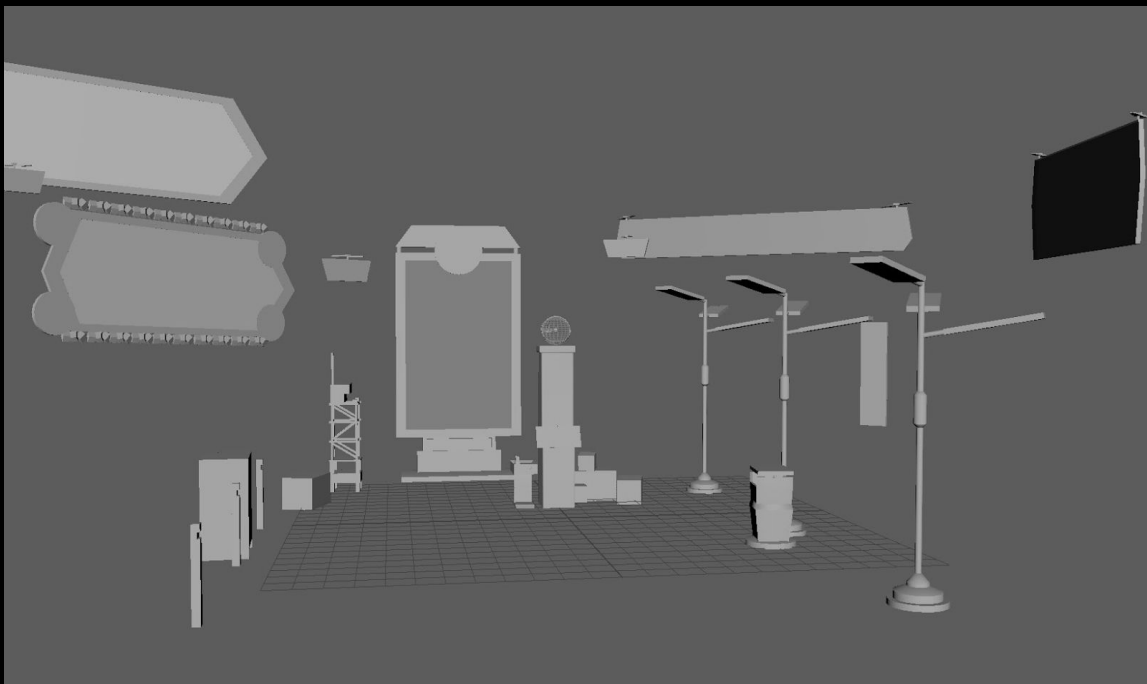
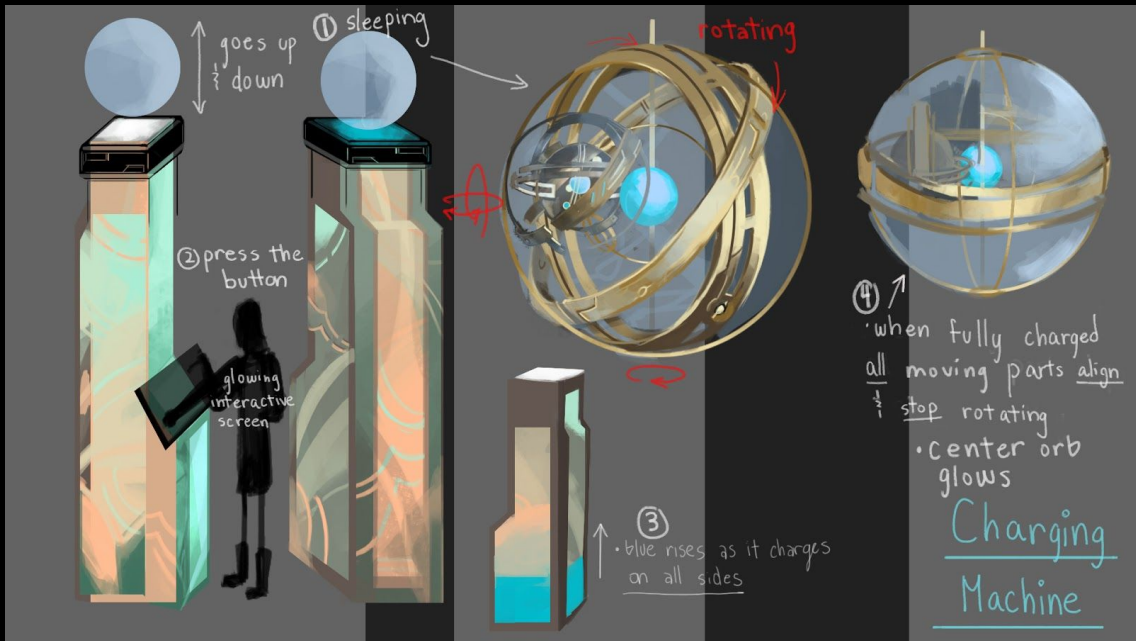


Battery

Each Officer has a battery that runs out in three hours. (Not in AR)

1) Charging Stations

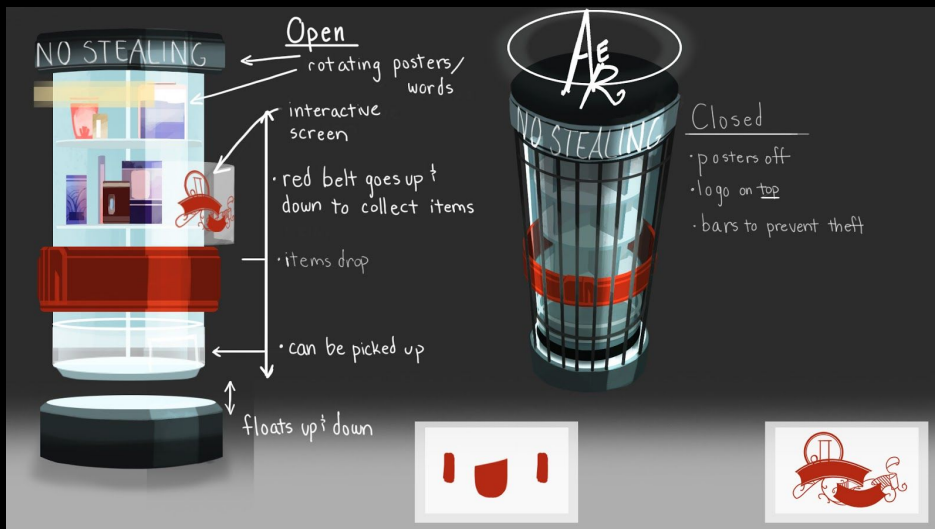
After their batteries run out, Officers must go to the nearest charging station to recharge it and continue playing. If they don't, they will be deactivated. At the charging station, their position will be broadcasted to the Hacker.



Charging Station Scene Graybox

2) Vending Machines

These machines sell players in game consumables that reduces the amount of information that other players receive. For example, if an Officer consumes a soda called **Out of Sight**, their location will not be broadcast to the Hacker for the next hour.



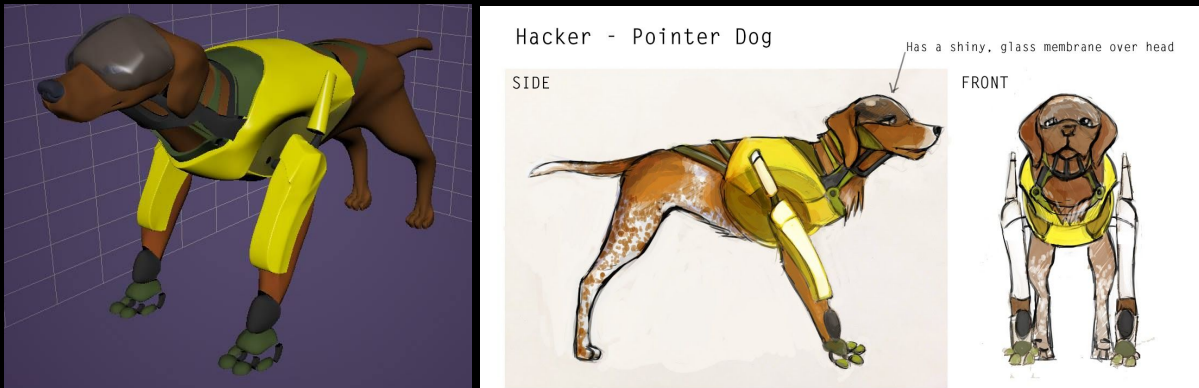
Vending Machine in AR Concept

3) Coins

This is the in game currency to be used at vending machines. They can only be found by eliminated players, who can give it to a player of their choice for a boost.

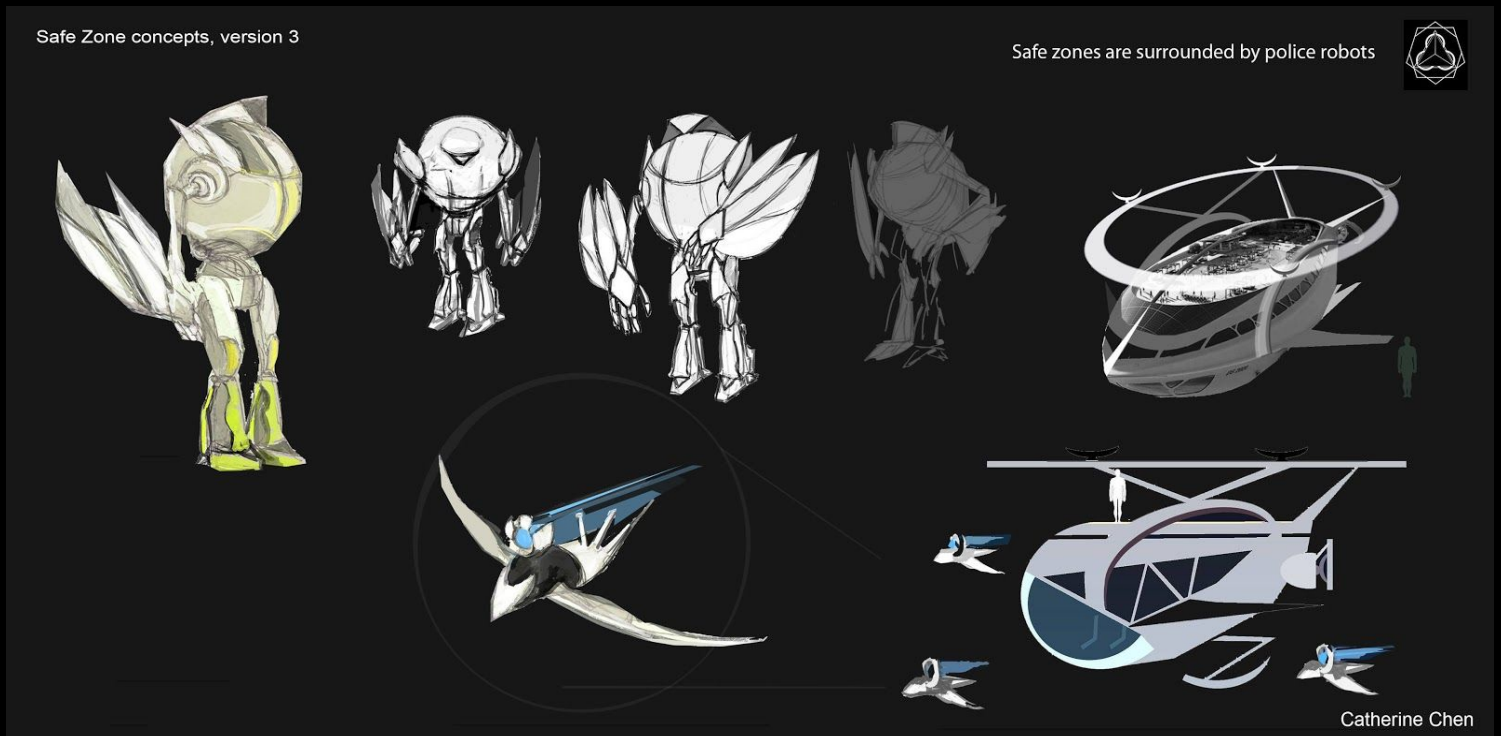
4) Pointer Dogs

Pointer dogs are NPC dog characters that point in the general direction of coins.



5) Safe Zone

A safe zone appears on the Officers' map at the beginning of every hour. Hackers can find this location only if they are within 40 meters of it. Within the safe zone, Officers can't be hacked. This location changes every hour.



6) Non-Playable Characters

These NPCs provide information about players' whereabouts and movements. As a balancing mechanism, we will use this formula: If the remaining hours of the game are greater than that of active Officers, the NPCs will provide clues that are more significant.

Scoring and Leaderboard System

Rankings are split into weekly or all time leaderboards. They can be viewed next to charging stations in the AR game world. Players can view the names of friends who rank above and below them, as well as how many games they've won or lost.

A cool incentive that we want to implement in the future is that the highest ranking players will get an enamel pin of their own icon.

Narrative Progression

Each win as a Hacker or Officer adds to the AR world visually, regardless of who plays. If the Hacker wins, the world becomes more of a post-apocalyptic reality. If the Officers win, the world shifts more into a nostalgic reality. These changes persist, stack, and are shared experiences.



Example Gameplay

Game #1 - Hacker Win

In this round, there are five friends playing: Catherine, Diego, Talia, Jessie, and Sydney. Catherine is the Hacker, and the rest are Officers. The game is played in six hours on a normal school day.

- Catherine loads into the game and receives notification of all the locations of the other players.
- Catherine chooses to frame Diego for the first attack. She knows Diego and Talia have the same class. She goes to Diego's location and hacks Talia.
- Catherine wants to keep framing Diego, so she waits until he's within hacking range of Sydney and hacks her.
- Jessie starts getting suspicious so Catherine then chooses to make themselves a less likely suspect by hacking Jessie while Catherine herself is in a class.
- Catherine hacks Diego last, because she has her last class with him and he's the only Officer left.
- Catherine wins the game!

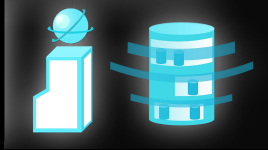
Game #2 - Officers Win

In this round, the same five friends are playing, except this time, Jessie is the Hacker. The game is still played in six hours on a normal school day.

- Catherine gets hacked first near Diego's on-campus workplace.
- The other Officers suspect Diego. Diego doesn't want to be voted out of the game so he convinces Jessie that he isn't the Hacker. Jessie agrees not to vote Diego out during the game.
- Diego goes to an NPC to get information on the Hacker. The NPC tells him that only Jessie, Sydney, and Catherine were in the area of the last hack.
- Diego searches the location where Catherine was hacked and finds a footprint in the area. He knows Sydney usually sits here for lunch, so he suspects her.
- Diego tries to convince Jessie and Talia vote against Sydney. Jessie and Talia agree, and Sydney is wrongfully eliminated.
- Diego texts for the remaining Officers to meet him in the safe zone.
- Catherine searches for coins and gives them to Diego so that he can purchase an *Out of Sight*. He's unable to be tracked for the next half an hour, so he gets to the safe zone without incident.
- Talia arrives at the safe zone next.
- Jessie talks to an NPC and finds out where Talia and Diego are going. She arrives at the safe zone much later.
- Diego and Talia realize that Jessie is the Hacker and vote to eliminate her.
- Officers win this round!

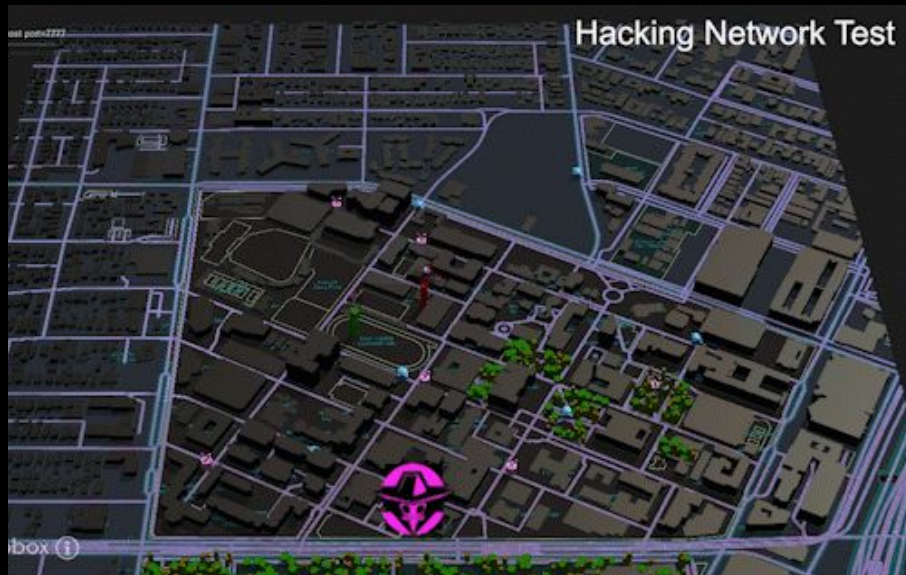
Tools and Technology

Unity 5



Unity 5 allows for the integration of using Mapbox and ARkit. As this game needs to be revised through much playtesting, Unity is the perfect game engine as it is designed to be efficient at prototyping.

Map - Mapbox



-> to AR, ARkit



The location of AR objects are manually plotted and will be playtested to find the mathematical ideal distribution. This math will be used to expand the game to other college campuses and upto Mapbox Studio.

iOS

Our decision to develop for Apple is because ARkit has the strongest visual capabilities and has the most promise for future development. It has plane detection and light tracking. We will use colored camera filters to change the color of the environment and particle effects to strengthen the illusion of 3D space and visual integration.



Created by Catherine Chen
and Team Hackerbird

Blue = committed with this project and will take AGP

Name	Role	Major	Notes
Catherine Chen	Director (2D/3D art, design, programming)	Animation	(volunteered on AGP)
Izzy Rees	Producer	IMGD	(AGP art-lead, Intermediate)
Sydney Lang	Design Lead	IMGD	(taking Intermediate)
Talia Olson	Narrative Lead	Animation	(taking AGP)
Jessie Chang	Concept Artist	Animation	Game Animation minor
Diego Yanez	Concept Artist	Animation	(volunteered on AGP)
Brenda Chen	3D Modeler	Animation	Game Programming minor
Evan Wank	3D Modeler	Theatre	
Ryan Meagher	Musician	Thornton	(AGP audio co-lead)

Guest Artists

Haley Tomaszewski	Early Concept Artist	Animation
Danielle Chua	Early Graphics Artist	N/A
Hannah Bosnian	Soda Artist	Animation

Additional Feedback

Jacob Pitts, Sabrina Yam
Dave Zhu, Davy Yue
Keanu Concepcion

Advisement

Michael Patterson
Richard Lemarchand
Jane Pinckard
Sean Bouchard
Danny Bilson
Scott Easley
Zynga

This project would not have been possible without the help of those who have dedicated their free time to help us create this game. We thank everyone for their contribution and the faculty advisors who have taken their extra time to meet with us and guide us through conceptualization and development.

Additional Team

We are looking for 15 members in addition to the 5 committed members.

+3 Engineers	+1 Producer	+2 2D artists	+1 Writer
+2 Designers	+2 Audio	+3 3D artists	+1 Usability

Team Goals and Scope

By the end of AGP, we would like to create a fully polished, playable round of Hacker for a 5-7 person game. This round will be available on iOS only. Due to the scope of this project, this game will be mapped for the University of Southern California campus.

These are some potential expansions beyond AGP:

- 1) Most AR world changes with multiple rounds
- 2) Merchandising of real life icons
- 3) Expansion to other college campuses
- 4) Development for Android

Milestones

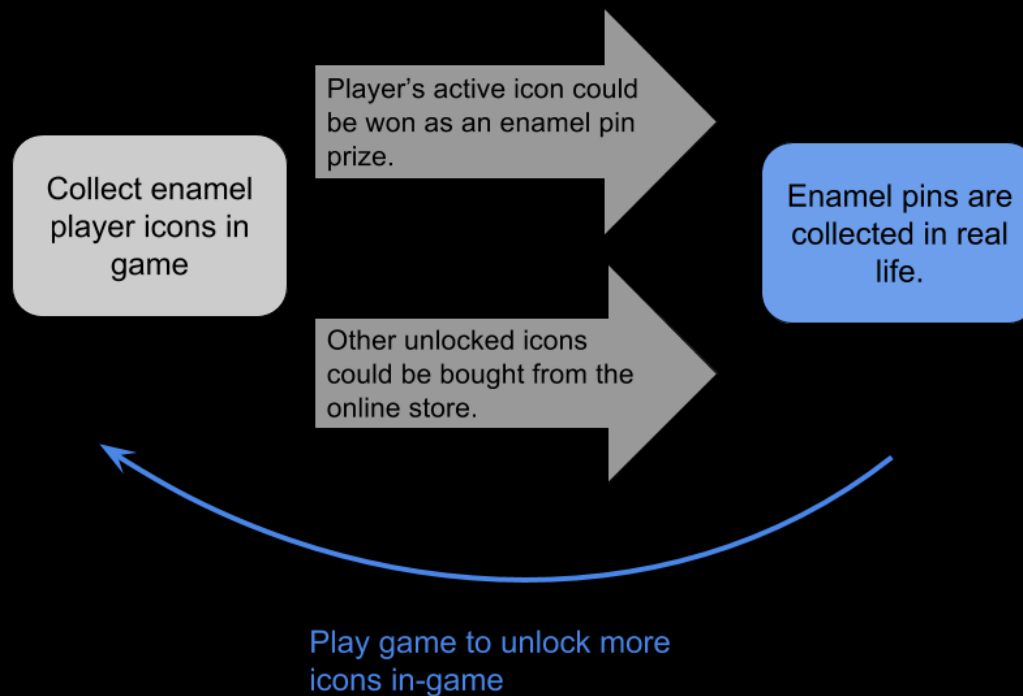
June 20th, 2018	Game mechanics are polished and completely finalized after multiple rounds of revision. Narrative, characters, and worldbuilding are reviewed, revised, and polished.
August 20th 2018 (Summer Pre Production)	Concept art and 2D drafts for the entire game are done. All characters and main 3D models are halfway complete. Prototypes of the game is playtested with concurrent players and revised at least five times.
October 2018 (First Semester Mid Term)	Tutorialization is seamless. All core 3D models are rigged and are placed into the game as placeholders. Any necessary in-game text, 2D UI animation and 2D illustrations, sound effects, and UI interface are complete.
December 2018 (First Semester Final)	For Winter Demo Day, all of the game mechanics for one round is completed. Map and AR are revised and complete. Main 3D model textures are finalized and animated. All 2D animation and music tracks are created.
March 2019 (Second Semester Midterm)	All extra 3D world elements are built and roughly textured. Particle systems are complete. All 3D animation are complete. Sound effects and music are revised and complete.
May 2019 (Second Semester Final)	All bugs fixed. Build is complete and ready for distribution to the App Store.

Monetization

Banner Ads/Branded content are within the AR game world as art posters, graffiti, and graphics in the AR cyberpunk city. They are part of the visual elements that are added between playthroughs. Inspired by the streets of Hong Kong and Tokyo, these beautiful banner ads blend into the cyberpunk city.

Merchandising and Licensing - We will have a high KPI achieved through natural player interaction. In addition, merchandise are sold and act as real life collectible rewards. These are items that people could wear/carry on them as an additional way that that players could advertise and promote discussion about the game.

Merchandise Core Loop



Enamel pins of the in-game enamel icons for the top 10 players of the week. The pin you receive is the one that the player has active in the game.