Luna Game Design Document

This is a group game proposal project by David Zhu, Zezhi Guo, and Dmitry Shuklin in 2021. We proposed the gameplay, feature, aesthetics, and user experience in this proposal. I contributed to the brainstorm of gameplay, player experience structures, and subsections of feature specs.

GROUP PROJECT | GAME PROPOSAL | PRODUCTION

September 2020 - May 2021
https://group-luna-game-design.blogspot.com/



Core Gameplay and Targets

Core Pillars

- explore the large open world
- battle in real-time, skills and rotating hand of cards
- follow the main quest to complete the story and earn rewards
- create and customize their own character, visuals and class choice
- unlock new cards, weapons, and cosmetics through a gacha system
- complete side quests for small rewards
- team up with players in online co-op
- purchase premium currency for premium gacha
- clear view of UI system to manage settings, stats
- a large choice of cards for weapons, skills and spells that promotes different styles of playing
- create their own card deck based on their strategy
- make friends with each other and enjoy game with friends

Player Experiences

- satisfaction when upgrading items and skills, finishing a hard quest and beating enimies
- relax when when exploring the world, finding easter eggs
- motivation when when collect more cards they can use to build deck
- immersion when following the story and explore the world
- excitement when when communicating and fighting together with squad
- challenge when operate cards and skills while playing battle
- strategy when modify and build decks
- enjoyment when collecting good clothes and card graphics
- hardcore when fighting with hard computer or other players and improving their skills and strategies
- clear when view the UI system and could easily make changes to settings

Required Systems

- Character system (unique characters, chosen by player)
- Card system (deck of cards used for combat)
- Class system (types of cards characters are able to use)
- Gacha system (obtaining new cards and characters)
- Travel system (walking, mounts, waypoints)
- Quest system (triggering quests, rewards after completing)
- Currency system (standard, premium)
- Trade system (marketplace (P&P), merchandisers (P&E))
- Dungeon/raid system (multiplayer quests, easy & hard.)
- Minimap system (important locations and regions marked)
- Inventory system (player stored gear, items, etc.)







Image Credits: Stable Diffusion

Feature list is not complete on the page, more core features and design inspirations is here>

Narrative and Inspirations

In 4000 BC, as one of the oldest civilizations in the world, the ancient Luna region established a series of city-states. The ancient Lunans began to establish their own civilization, including the creation of written symbols and social systems, and for the first time proposed the concept of "Upper Existence"(the God). Perhaps in order to look for the comfort of the fragile soul or the meaning of life and death, more and more residents in the city-state choose to follow the God called Scorpion and believe that he/she can bring answers to all questions.

In 3427 BC, the King appeared on this land, quickly conquered all the city-states, and unified the Ancient Luna through his tricks and leadership. Later, he re-divided ancient Luna into four city-states: the city of creation; the city of holy; the city of gold, and the central city.

In 3400 BC, the city-states returned to normal. One day, people discovered that more and more indescribable strange creatures appeared on this land. They all have one characteristic: they seemed to have a strong hatred for this world and its people. In order to protect Luna, the King's son, Luna's second dominator, ordered his priests to make palm-sized portable slates called Tarot and use slates to seal these creatures.

In 3390 BC, finally 85 creatures were sealed in their respective slates. The dominator decided to bring these slates into the pyramid along with his coffin. He additionally added the 86th blank slate to 85 slates to be used by future generations to find a way to deal with them. However, what the dementor did not know is that his decision about the black slate accidentally created a chance for preserving a special existence, the secret 86th Horror that did not even appear yet, for thousands of years with other sealed 85 known creatures.

B.C. 4000 | B.C. 3427 | B.C. 3390 | A.D. 1470

In 3410 BC, there was a severe drought in ancient Luna, which led to successive years of famine. The desperate people had to place all their hopes to their God. But their God did not respond to his people's expectations. The ubiquitous hunger and deaths wiped out King's spirit. Finally, the King decided to use the most direct and ultimate way to show his supreme sincerity in order to save his people: sacrifice.

Sacrifice requires 56 people's eyes and 20 people's hearts. Therefore, to be fair, the King decided to draw lots in the four city-states. This rule must be followed by all ordinary people and high-ranking nobles without any exception. Ironically, on the last day of drawing lots, the King got the black letter from the central city, and he had to be killed under the effect of his own rules amidst the shouts of soldiers, civilians, and nobles around him.

In 3402 BC, the sacrifice was held. 56 sets of eyes and 20 hearts were placed in a circle surrounded by raging flames at noon. Most of people thoughts it was the end of their suffering. Desperately, to the end, the world has not changed in any way. Some people in the crowd saw the back of a little girl and a little boy holding hands together and walking quietly into the fire. Soon, the moment the flame went out, a long-lost rain suddenly appeared in the sky. A miracle finally happened

In 1470, the Eupia explorer John heard the ancient legend about the Ancient Luna's Tarot and came to Lunia, the modern Luna, to enter the pyramids to explore the truth of the Tarot. Through five years of discovering and researching, he finally discovered these slates under the third biggest pyramid on the south of Lunia and was deeply attracted by the different patterns drawn on the slates. He took all these slates out and shipped them back to Eupia for further in-depth study. Strangely, on the night of the third day after John returned to his country, John disappeared from his room in his home. Almost all the slates were gone, except for the blank slate on John's bed...

Inspirations

- Genshin Impact : genre, music
- Clash of Clans : card + dice
- Tarot Cards : mystery
- Monster Hunter World : melee weapons, music themes
- Final Fantacy 14 : magic weapons
- D&D : world setting
- Game of Thrones : Back Ground Music
- Fire Emblem : characters' artstyle and story lines
- Tarot Cards : mystery
- Fate Series : back story and theme
- Zelda : weapons swapping, weapon system
- The Witcher, Guild Wars 2 : artstyle
- Deemo, Bandori : rhythm
- Hand of Fate 2 : card, RPG
- Hearthstone, Fate/Grand Order : card and minions

More story> and character journey> can be found on website page.

Feature Specs

Combat System

- Combat - total combat system (without card play)
- Weapon Combat - basic attack for each weapon type
- Card Combat - special attacks and magic from cards
- Skill System - players could use sperical skill combos for combat
- HP & MP - one of the fundamental systems represented by the UI
- Danger Alert - players could see alerts when they are taking damage or have a low health
- Minion Behavior - cards may able to cast minions (minion AI should be included)
- VFX & SFX - certain skill/gear/card may have special effects when active

details can be found on combat system page>

Card Build System

- View Cards - the panel for viewing the cards holding
- Deck Builder - the deck build panel to edit current deck
- Cards Manager - check the remaining of each cards (cards are perishable once used)
- Cards Composition & Acquire - the different rarenesses for each card, where do these cards come from (bosses, gacha, compose)
- Cards UI - what's the demo of a card? relative HP / MP / ATK / DEF? where illustration and where descriptions?
- Cards Search - search by name / rank / rareness / classes
- Minion Behavior - cards may able to cast minions (minion AI should be included)
- Card Descriptions - the skill, function of each card (written on each card)
- Card Graphics - the visual graphics of each card

details can be found on card build system page>

Character Information

- Class Selection - when creating a character. the class can't be changed through gameplay (specify T / N / DPS)
- Details Modification - hair, eyes, etc. (including name)
- Character Level - record the level of the character
- Inventory & Gear - inventry to store all the cards, weapons and skins etc
- Resurrection - if a player dies in the world, where and how to revive, what are the penalties or buffs
- Panels - character panel / gear penal / setting panel etc.
- Character Stats - AD / AP / agility / stamina (MP) / HP / crit / etc.
- Character Skills - skills comes along with character, in comparison to gear skills, and skill book
- Character Graphics - the visual graphics and modeling of the character

details can be found on chracter information page>

Online Play

- Auto Match Finding - attend dungeons without forming a sqad
- Squad Match Finding - attend dungeons with a sqad
- Squad & Squad Boards - all other players who wants teammates
- PVP Arena - PVP in this game (PVP can happen in neutral maps (like PVP areas in WoW))
- Ranking System - Players could combat with each other and win points in the Ladder Tournament (PVP rank) / DPS (passtime) (PVE rank)
- Friend System - players can add friends with each other

details can be found on online play page>

Gears and Items

- Gears & Items - weapons and armor that the player can equip to their character
- Gear/Item Level & Rareness - level of each item and its rareness (IL for properties while Q for hardness for acquire) and its stats
- Gear Skills - gears & weapons that has special skills (active/passive)
- Gear/Item Graphics - physical sppearance & glyph in inventory
- Gear/Item Index - UID (unit id) for each item

details can be found on online play page>

Map System

- Main Map - expandable minimap showing important info and objectives
- Icon Set & Captions - NPC/player location/cursor/path finder/quests location/special location
- Teleport (Points) - teleport locations and waypoints to instantly traverse long distances (will it cost?)
- Terrains - topographics and color schemes to indicate mountain/river/etc.

details can be found on map system page>

Sound and Music

- Sound Effects - sound effects for every action the player can take, movement, attacks, menus, interactions
- Background Music - background music, varied by region, in/out of combat, special music for boss battles
- Dialogue - Dialogue for cutscenes and conversations with NPCs (language options too?) +subtitles
- CG Music - the backgroud music when showing CGs

details can be found on online play page>

UI System

- Settings Panel - the setting panel to change the settings including sound, image, hot keys etc
- Battle Assistants - players could view the combat statics here, including damage dealt, damage taken etc.
- Third Party Plugins - players could manage and input some third party plugins here
- In Battle UI - HP & MP etc. / special effects
- Buff & Debuff - the display of all kinds of buff and debuff
- Right Click Menu - players could see alerts when they are taking damage or have a low health
- Minion Behavior - cards may able to cast minions (minion AI should be included)
- VFX & SFX - certain skill/gear/card may have special effects when active

details can be found on UI system page>

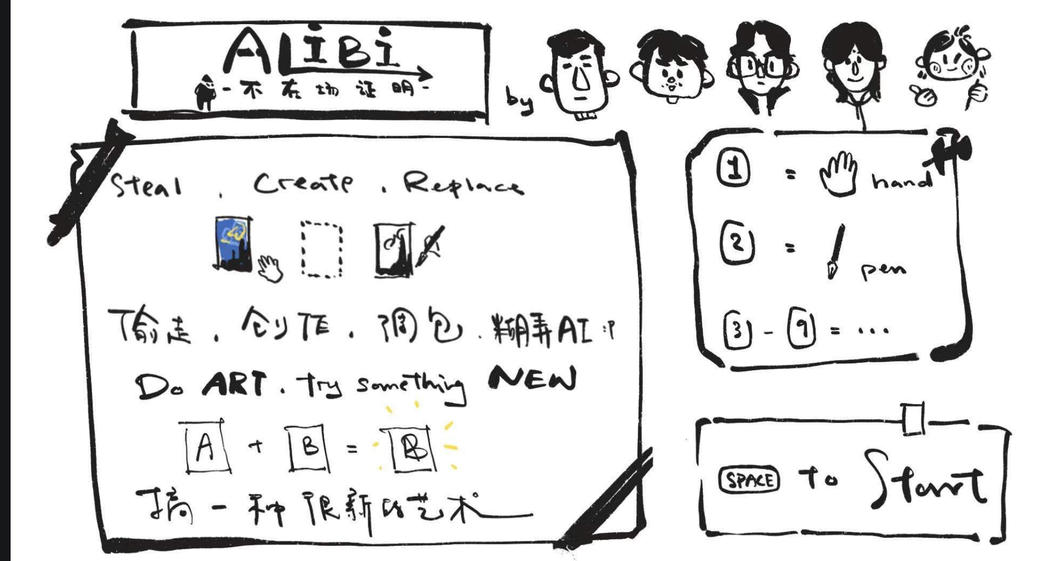
All 16 feature specs and detailed design document can be found here>

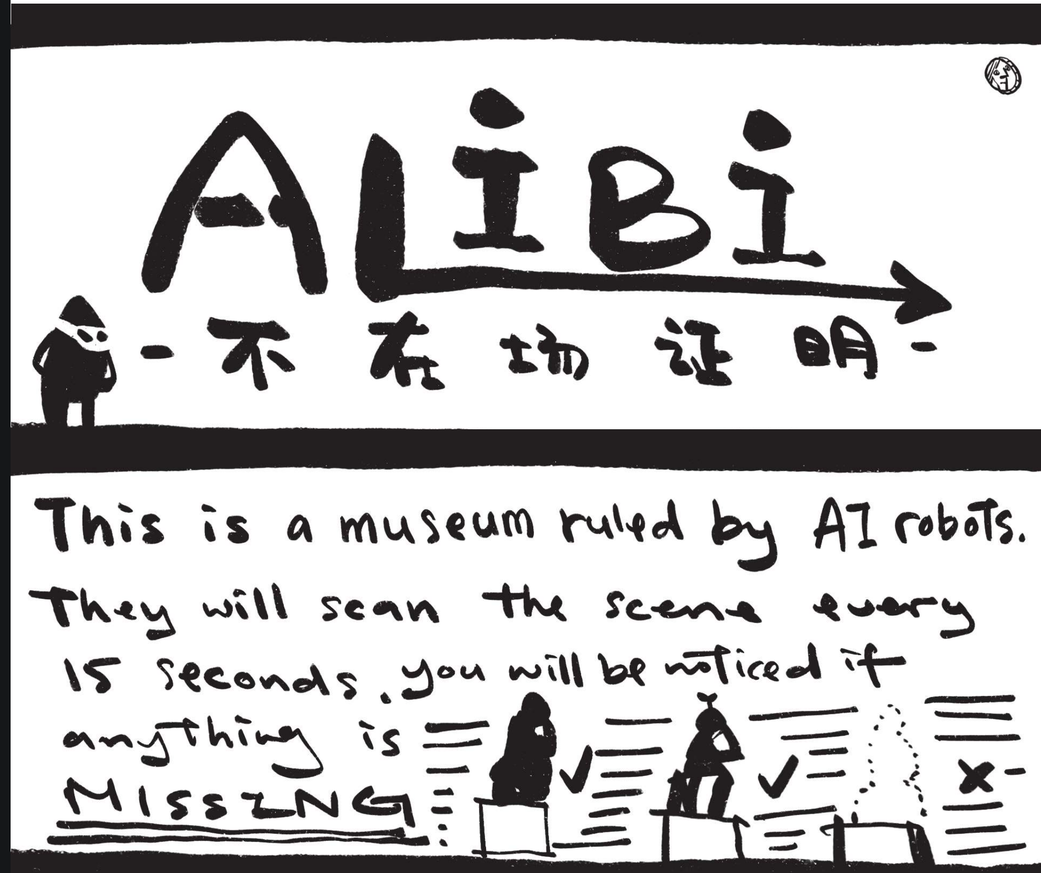
Alibi Design Document

This is a group Unity Game Jam project by Junting (David) Zhu, Yufeng Liu, Runze Wang, Viki. and Xia Yu. The topic is “end where you start”. My role in the team is game design and game production documents.

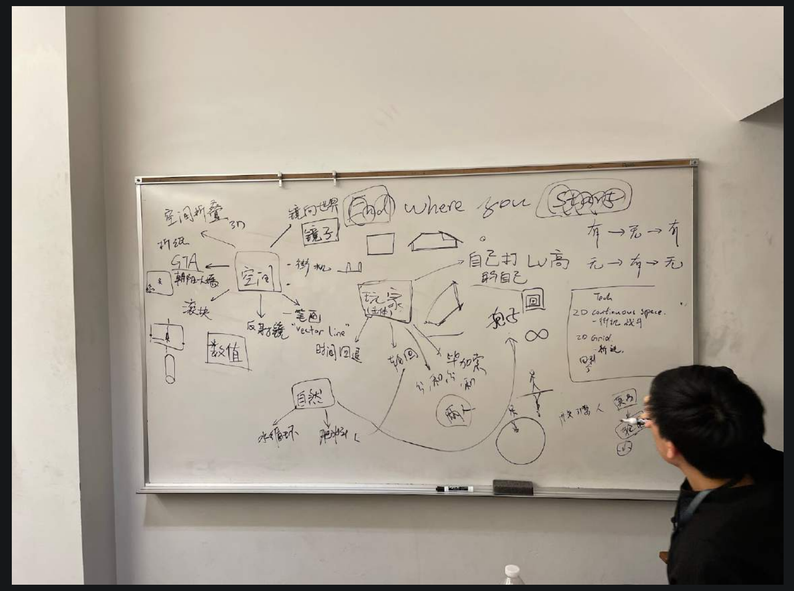
GROUP PROJECT | GAME DESIGN | UNITY DEV JAM

October 14, 2022 ~ October 21, 2022
Game Link: https://lyf1436.itch.io/alibi
Video Link: https://www.youtube.com/watch?v=pOyVpWvXGI4
https://group-alibi-game-design-production.blogspot.com/





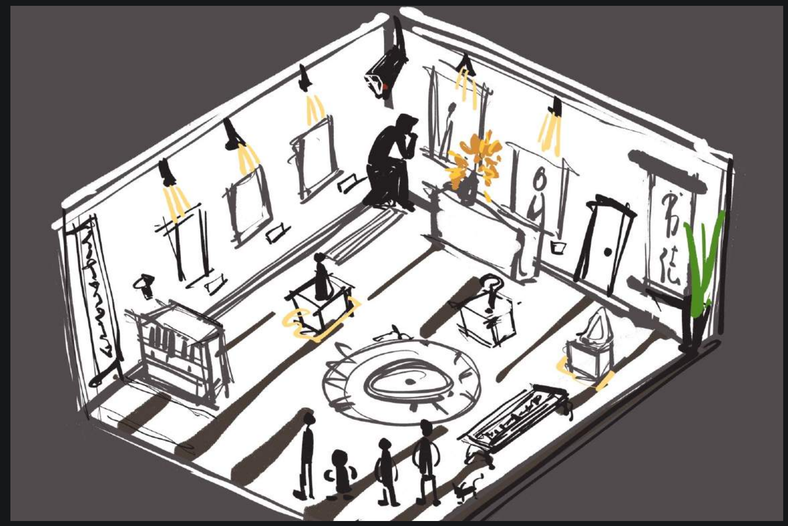
Brainstorm and Concepts



Mindmap Brainstorming

After we get the topic of this week's Game Jam: End Where You Started, we started to brainstorm ideas on the whiteboard, consisting of everything, game-related or nongame-related:

- the paper roll that the start and the end is one point
- Mobius belt
- the mirrored world that two sides end up together
- player level up and at some point, the player has to defeat him/herself (the stronger, the more difficult)
- the natural circulation: rainwater - river - sea - steam - cloud - rain
- the HP and stats of the player have to remain the same at end and start
- one single line draw of a vector line, (and so on.....)



Conceptual Map

This is a rough sketch of the game map. The major game elements are paintings, calligraphies, sculptures, plants, furniture, and a door. In conceptual gameplay, players can steal these exhibits, or makeup exhibits using items in the scenario to earn revenue.

Several ideas are:

- use paintings as a tool to combine other exhibits
- explore the room to find hidden keys, fingerprints, and materials to make up fake statues
- players can use the pen to modify the exhibits or draw on the blank canvas to create fake exhibits (to avoid being caught by the camera)
- there will be limited time for players to interact with things around; also, creating fake items also takes some time

more about concepts can be found here>



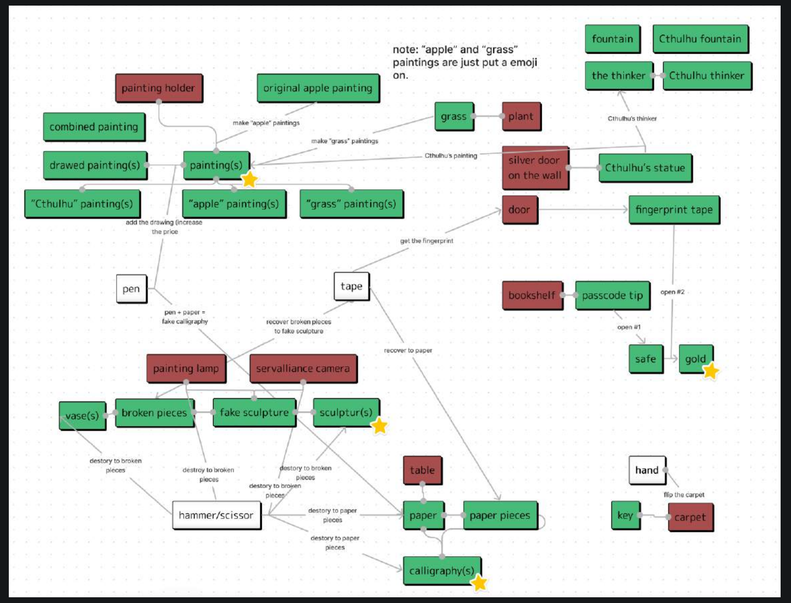
Rhythm of the Game

The player is role-playing the thief who sneaks inside a collector, Ms. Viki's room. You have to steal as many valuable exhibits as possible in the given time as long as you are not being caught by the camera. You can even make your creations!

- the tone of the game should be humorous regarding players can make up the exhibits
- we are using lots of slang and cliches (such as The Son of Man) with humorous descriptions to make the game more engaging and interesting
- the players will laugh out seeing those descriptions, and also feel challenged when they are stealing things without being caught by the camera

Image Credits: Viki, David Zhu

GamePlay Design



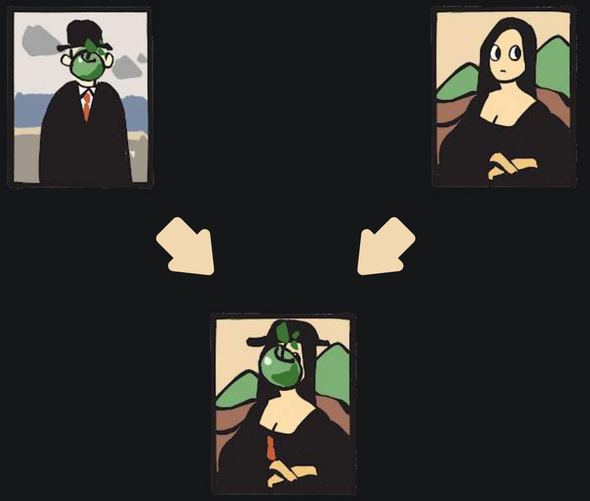
Game Design and Quests

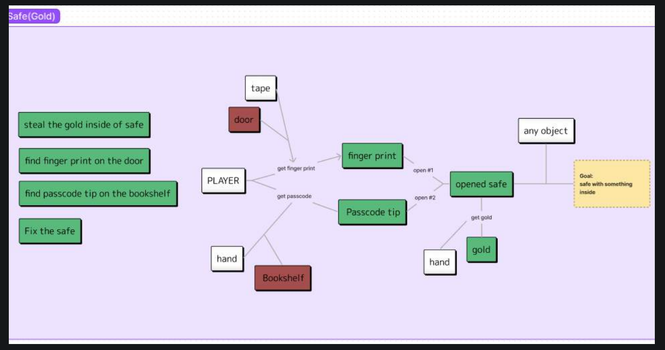
We designed several quest lines and tag them with how many steps the user has. there are also reward designs to figure out the best parameters to best reflect gameplay.

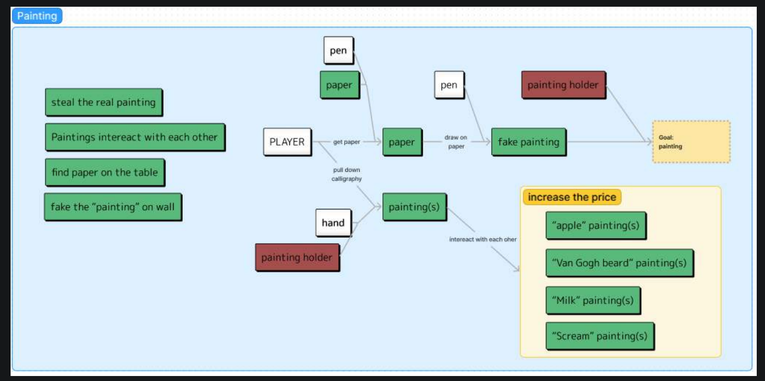
We used some math implementations to figure out the model between player interaction times (like how many times they have to click on something) and the reward he/she gets.

- In the map, RED are scene objects (can not be collected to player's bag), GREEN are collectable objects, WHITE are default tools, STAR are ultimate goals for players.
- These steps were done on October 17th, 2022
- Main contributor: Junting (David) Zhu

details can be found on Game Design> and Figma Board>







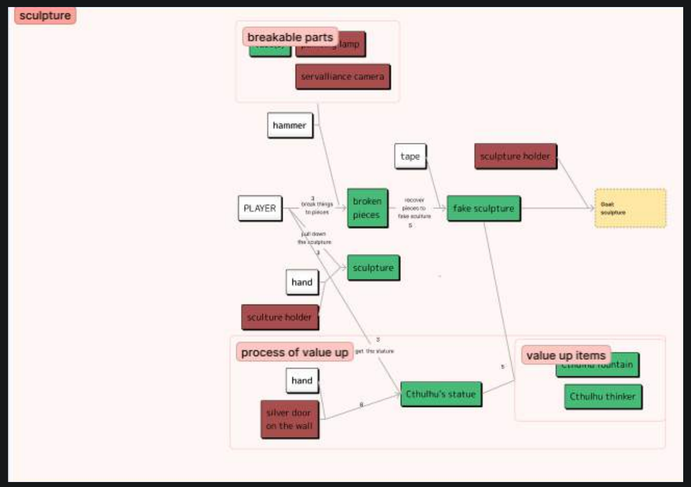
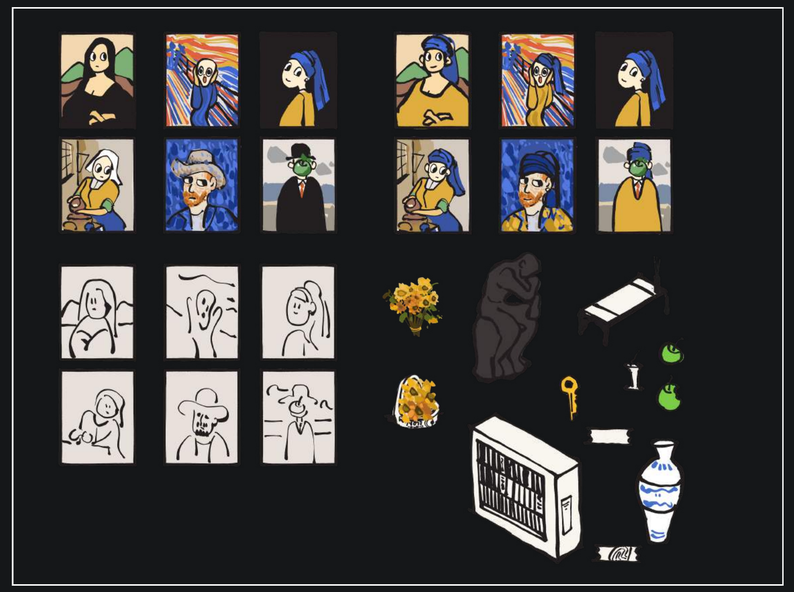
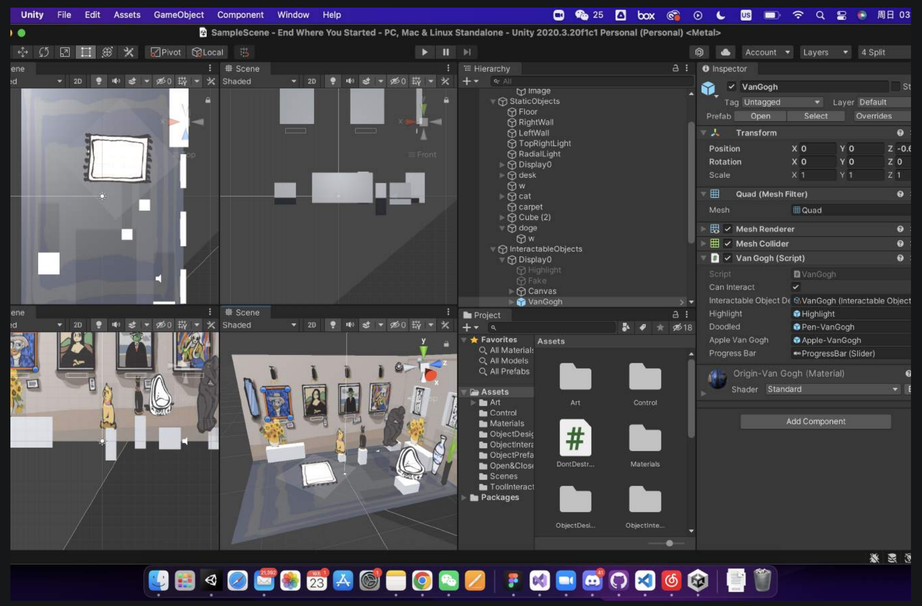


Image Credits:Viki, David Zhu

Art Assets, Development and Final Video





InteractableGameObjects

	Item name	Description	Time	Price ($)
1	apple	Maybe you know the apple core is toxic?		$188
2	apple girl	Maybe its not the apple s fault.		
3	apple milker	Apple juice?		
4	apple mona	The 1st formula of Mona Lisa, grand new breakthrough of physics!		$366
5	apple scream	It seems like pretty realistic.		
6	apple vangough	Everyday an apple, and then?		$366
7	basin	At least it can carries water		
8	cali1 (shu fa)	Maybe Ms. Viki knows a lot of calligraphy		$188
9	cali2 (xxx shu fa)	Maybe Ms. Viki knows a lot of calligraphy		
10	fake apple	Still looks like an apple		
11	fake cali1 (cao)	Be polite!		



Arts

Our core mechanics is to steal paintings and sculptures and combine them with different artwork; we selected several arts from the most famous artworks and tried to combine the art style, scene objects, and color palette to create a hilarious feeling.

One of the proudest merged artworks we created was the Sunflower Fountain (VanGough's Sunflower and Duchamp's Foutain).

details can be found on Art Assets Page>

Development Process

We used Plastic SCM for version control and different branches for co-programmers and Unity version 2020.3.20f1c1 as the developing engine. Main developer was Yufeng Liu, co-developer was Junting (David) Zhu.

- Final production was done on October 21th, 2022
- Main contributor: Yufeng Liu (programming), Viki (Art)

Final Video

The Final Video Can be Found on YouTube HERE>

- Otherwise, the Chinese version is HERE>
- All credits: Junting (David) Zhu - Game Design and Production, Yufeng Liu - Development, Runze Wang - Number Design , Viki - Art, and Xia Yu - Game Design

the online game can be found on itch.io>

Image Credits: David Zhu, Viki

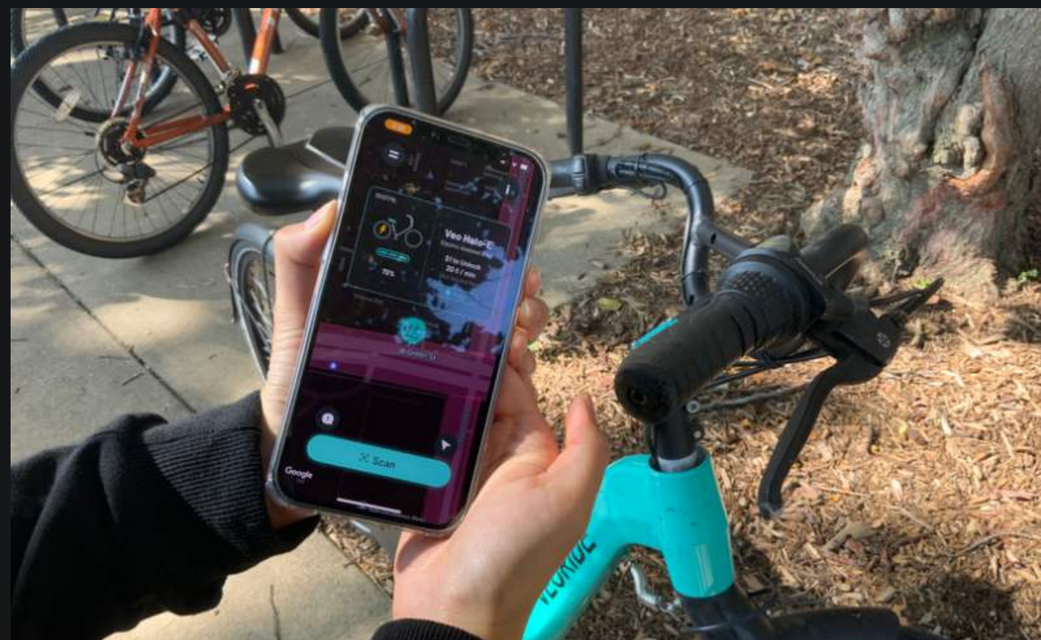
Dymo--A Dynamic Scooter Distribution System

This is a group project by Junting (David) Zhu, Zezhi (Jimmy) Guo, and Yuhe (Ruby) Cui of designing a futuristic dynamic campus scooter distribution system and a smart scooter that can provide a safer and better user experience. My role is to evaluate and propose the algorithm implementation and design the overall user experience. (research and paper in progress)

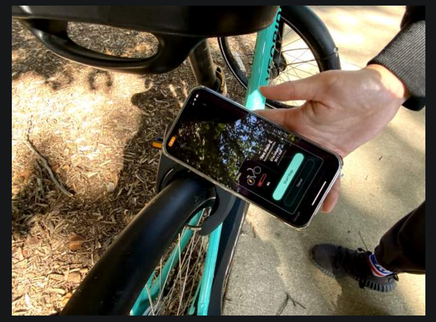
GROUP PROJECT | INDUSTRIAL DESIGN | PROPOSAL

August 22, 2022 to current
Abstract being accepted at AMPS journal>
Presentation Document Link>





Background and Investigation







Our Starting Point

To have a further understanding of the scooter and the current transportation system's problems, we spent 3 weeks researching the current bike/scooter-sharing system and people's opinions about scooters.

By digging into the topic from various perspectives, we hope to design a dynamic campus scooter distribution system and a smart scooter that can provide a safer and better user experience.

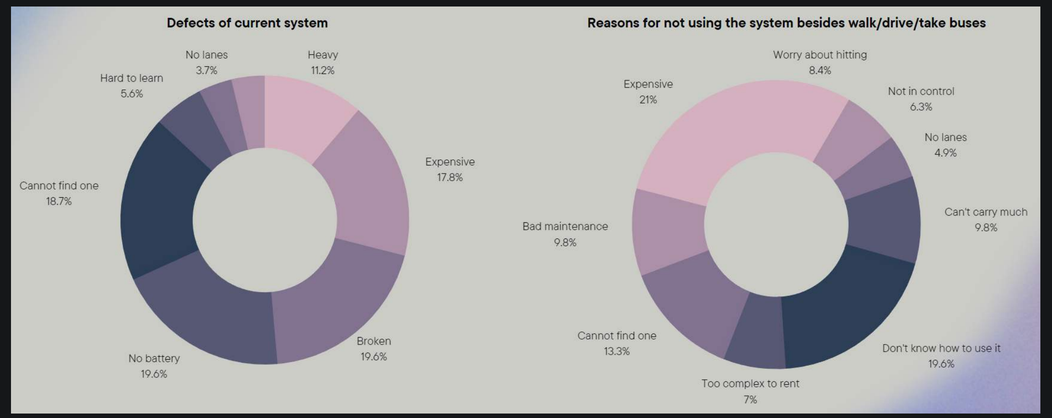
details can be found in presentation>

Interview

Based on the preliminary research, we created a survey about the current bike sharing system and distributed it to college students. Here are some takeaways from our 110 responses:

65.5% haven't used the system, 71% expect to find a vehicle in less than 5 min, 58% spend 5-10 mins each trip, 47.4% don't think the price is reasonable and affordable

To obtain a deeper insight, we also conducted semi-structured interviews with 10 people living on campus and asked about their thoughts about the current bike-sharing system and scooters.



Safty

- People do not wear helmets
- Bike lanes are not well planned
- Pedestrians worry about speed

"Scooters' speeds are too fast."

"the bike lanes don't always follow the road sometimes they go into the sidewalks."

Quality of Service

- Broken/no battery
- Distribution
- Forbidden area
- Need more instructions
- Improper usage

"I have to select a functional one among different quality bikes."

"Previous user put the vehicle on the ground when it was raining."

Scooter

- Expensive to buy one
- Heavy to carry around
- Balance

"I don't want to buy one because it is too expensive."

" I feel it is too heavy for me to carry around."

System

- Weather Influence
- Second choice
- Price

"I would be too concerned about ice."

"If I miss the bus and I need to get to somewhere fast really quick I will use the system."

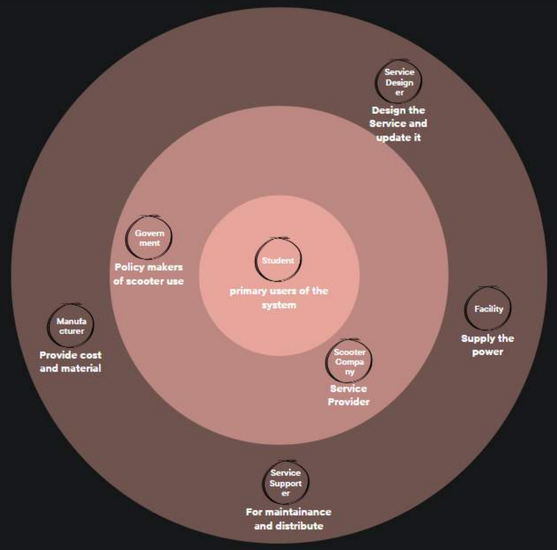
Market Research

Market Research

From comparing different companies, we have a better idea about the current bike/scooter sharing industries and their advantages and weaknesses. Some insights can be used in our scooter and system design.

The stakeholder's map is on the right side. The circles indicate relevance: various stakeholders are in different places according to how close they are involved in our proposal.

The research process went about 3 weeks from 2022.8 to 2022.9. We mostly traveled to scooter placeholders nearby, investigated the applications on phone, and talked to the workers in these scooters sharing companies.

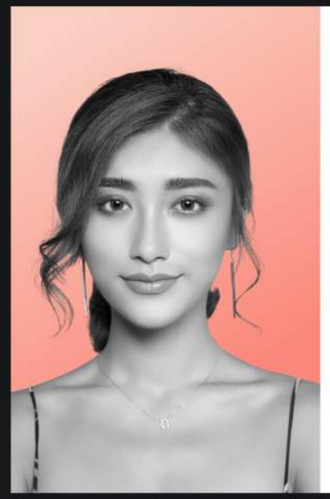


Competitor Analysis	Current Strategies	Pricing	Station Types	Competitive Advantages	Weakness
Veo	• Vehicle type: e-scooter, e-bike, bike; • Value quality; • Vertical supply chain	$1 to Unlock 36 ¢/ minute	Free-floating E-scooter sharing	• Smart geofenced regulations; • Swappable Battery • Distribution based on yesterday's tracking;	• Bad Quality; • Unclear App indications; • Safety Problem;
Lyft	• Vehicle type: e-scooter, bike; • Target underserved neighborhoods	$1 to Unlock 37 ¢/ minute	Free-floating E-scooter sharing	• Convenient Paying; • Free Helmet; • Lower Price; • Easy Accessing Portal;	• Bad Quality; • Easy to theft;
Bird	• Vehicle type: e-scooter, bike; • Eco-conscious design • Sell scooters and bikes	$1 to Unlock 49 ¢/ minute	Station bound E-scooter sharing	• State-of-the-Art Vehicle Diagnostics • Advanced anti-theft long used battery • Stability on complex roads	• Consumer quality parts; • Weak headlight - dangerous at night; • Small and solid wheels; • Outdated Distribution system;
Lime	• Have a valid U.S. driver's license to drive • Target universities and college campuses	$1 to Unlock 39 ¢/ minute	Station bound E-scooter sharing	• Affordability; • Light Weight & Better Control;	• Damage notification; • Warnings of automated speed reduction; • Inefficient maintenance; • Outdated Distribution system;

Personas

The two personas and scenarios are depicted as the potential users of our proposed system. These people are made up profiles based on our survey and interview results.

We currently focus more on university students who would travel on a short path, such as going to the classroom.



Name: Amy
Gender: Female
Age: 19
Location: Urbana, Champaign
Home: University Housing
Identity: Freshman College Student

Bio:

Amy just entered university this year and lives in University Housing. She lives far from the school, so she needs to walk to the bus stop near her home every day and take a bus of a certain route to the place where she attends her class. Frequent late arrivals of the bus or getting up late usually cause late arrivals. Amy is distressed.

Frustrations:

1. Delays in the public transport system lead to late arrivals.
2. It takes time to wait for the bus to arrive.
3. Buses can only reach fixed locations. (Unable to complete last mile transportation)

Wants:

1. More flexible method of transportation.
2. Reduce waiting time.
3. The system can be accessed from any location.



Name: Mike
Gender: Male
Age: 22
Location: Urbana, Champaign
Home: Apartment
Identity: Senior College Student

Bio:

Mike is a senior student in UIUC. He lives far from the bus station. Consider the price, portability, and security problems of buying a bike/scooter, he get used to the shared bicycle system on campus as the main way of transportation when he needs to go to some specific places. However, various problems with the system made it difficult for him to use it. Mike was frustrated at the thought of spending money and not having good riding experience.

Frustrations:

1. Unclear app guide and instructions.
2. Spend lots of time but can't find a scooter that can be used.
3. A damaged scooter leads to a dangerous ride.
4. Using the system is quite Expensive.

Wants:

1. Better user experience with clear App guidelines.
2. Shorter searching time.
3. Safer driving experience.
4. More affordable price.

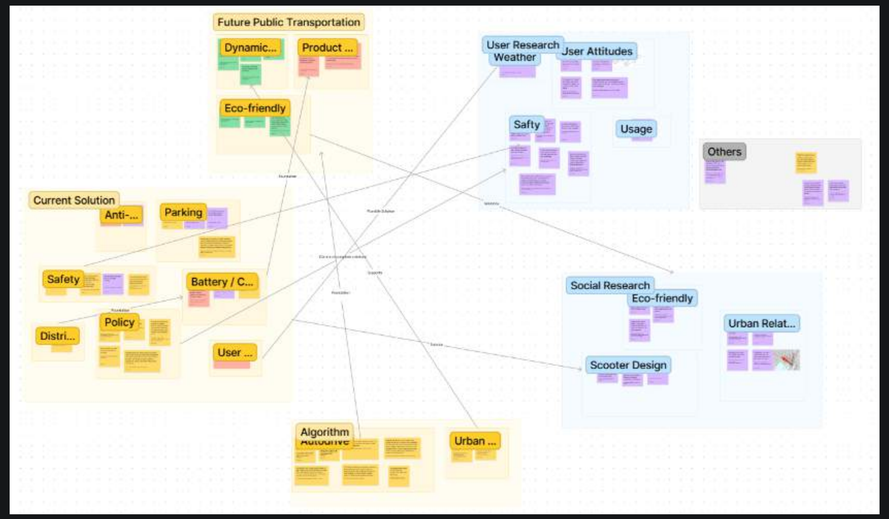
Literature Review

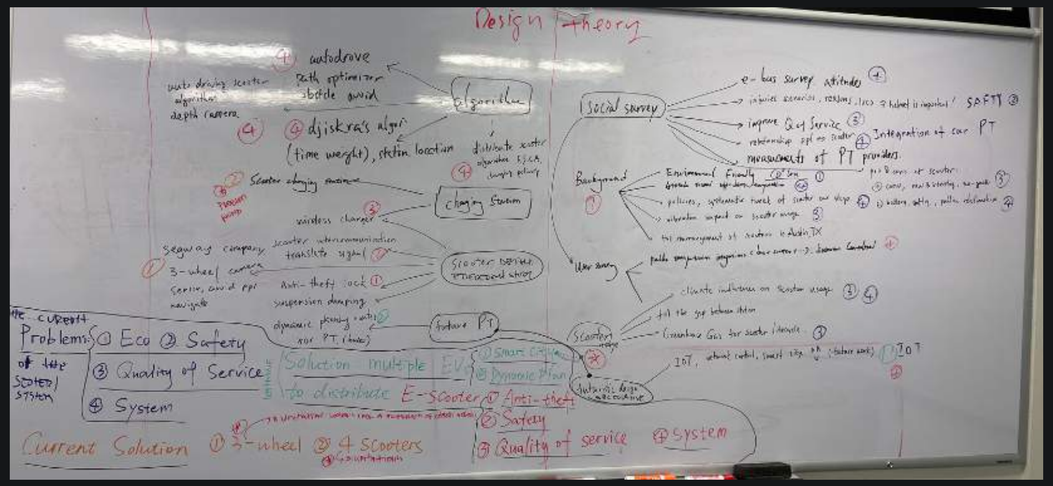
Literature Review

After having our own perception of the topic, we decided to move our focus to secondary research. We spent two weeks finding 28 articles that related to either scooter design or scooter public transportation systems with different focuses and analyzing them one by one. Then, we categorized the key information of each article into two main categories (Design & Theory) and several small categories. (Scooter's Design & Usage, Social Survey, Machine Algorithm, etc.)

Then, by putting them on a map and teasing out their relationships. we had a clearer view of all the information.

the whole literature map can be found here>





Frequent strong vibration when riding on complex road will make riders feel not comfortable.

Set speed limit when riding on a specific road.

Data collection on roads to make new policies in one area.

utilzing djisktra's algorithms and time implementation to present a better connection design for transportation networks

Problems

- Not wearing a helmet can cause serious problems. Studies suggest low rates of helmet use and high rates of head injuries during over 40% of accidents.
- Lack of effective regulations. Scooter riders usually not chose to follow the regulations and ride on sidewalks at a fast speed.
- The bad distribution of shared scooters makes people hard to find available scooters nearby.
- The short lifetime of scooters is one of the main contributors to greenhouse gas emissions.
- The high mobility and the always-changed speed make e-scooter become an unstable factor on the road and influence the traffic.

Current Solutions

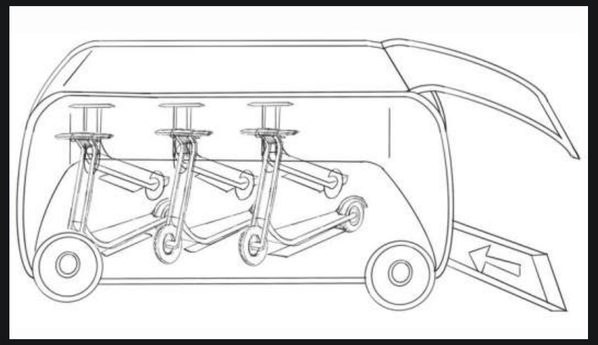
- Geofence that limits the speed/ the use of shared e-scooters in some of the areas.
- People in some countries can use mobile applications to report inappropriate scooter behaviors and obtain rewards.
- Swappable batteries can be changed efficiently and easily.
- In-depth cameras and sensors with a powerful algorithm that can detect and distinguish objects in front of/ around the scooter can help to avoid potential risks and conflicts.
- Advertising about how to ride scooters in the right and safe ways
- Policies for the government: some countries' and cities' governments have published policies to restrict riders' age. However, they are not effective and lack regulations.
- A scooter safety system utilizing Visible Light Communications (VLC) can transmit digital information among scooters and cars, but it can also make fatal mistakes and hurt drivers and other people on the street.
- Building Portable parking places is a good way to solve the charging problem, but it does not address the issue that people still have to take time to transport to the charging station
- Not well-designed Geofence mechanism brings bad riding experience. Riders cannot receive clear indications about scooter status changes and are not aware of the negative impacts of it.

Product Concept

Scooter Design

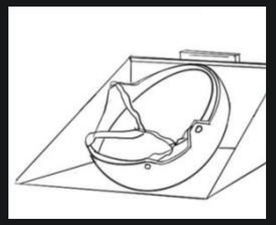
- Two front wheels: Beginner friendly
- Phone stand: Charge your phone, Map
- Helmet and basket: Move the helmet and basket to the front of the deck. Encourage riders to use the helmet
- Safety instruction: Safety instructions on the front of the deck
- Adjust height: Comfortable for all users
- LED light and solar panel: LED light on the side to send signals, solar energy

more iterations about scooter and van can be found here>

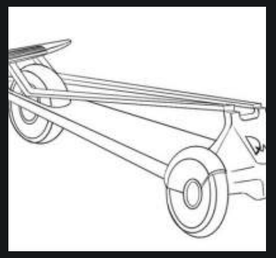












Electric Van Design

The electric van will travel around the designed area to collect used scooters, deliver scooters on request, and protect scooters from bad weather.

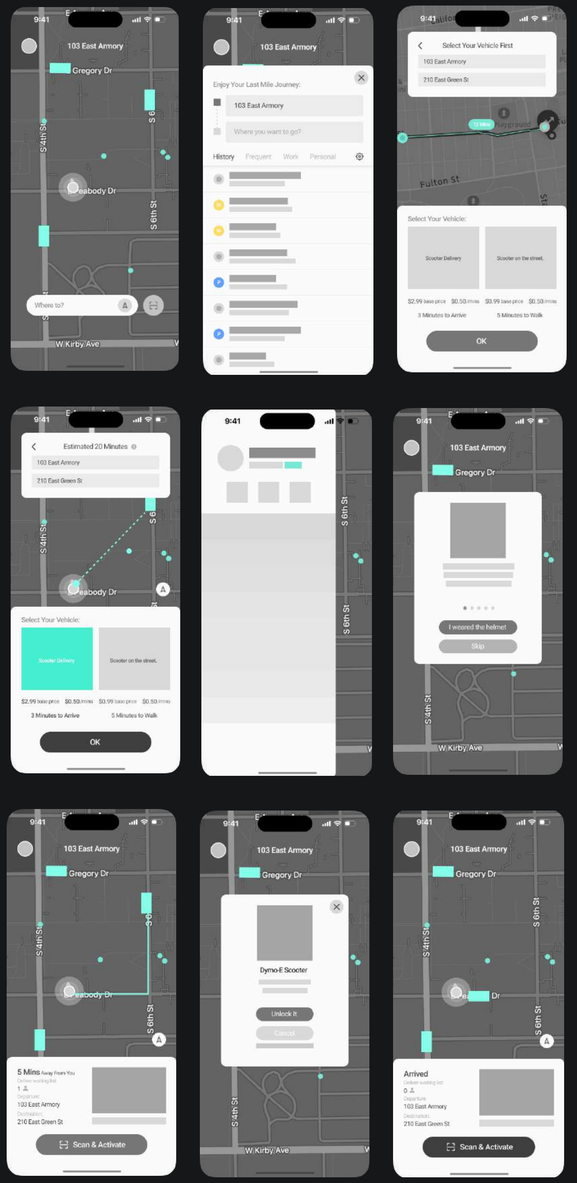
When collecting scooters, it will open the rear door and let the scooter go to the loading ramp. The scooter can be charged wirelessly inside the van. The distribution of the scooters inside the van is designed for autonomous scooters to easily go in and out.

UI and UX design

Based on the interview results and relative market research, we designed the mobile phone application for finding scooters and calling scooter delivery services.

The low-fidelity prototype is about clarifying the user experience and user flow. Users should be able to:

- check scooter locations nearby
- call a scooter delivery
- scan the code to unlock the scooter
- read safety instructions before the ride
- see fares and pay fares
- manage user profiles
- report unfunctional scooters and bugs



Thank You

You can explore more about me at my website, my LinkedIn, or my Resume:

MY WEBSITE

MY LINKEDIN

MY RESUME