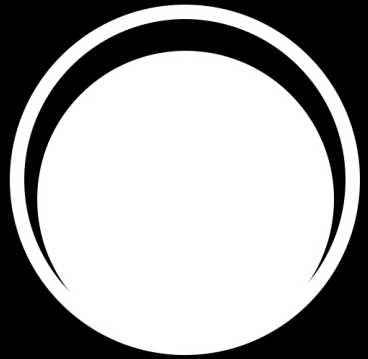
COVER LI YUJIAN 2021-2024

GAME DESIGN

Portfolio

https://danielyjli.github.io/



LI YUJIAN

Designer

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Education Background

Postgraduate

同濟大學 TONGJI UNIVERSITY

THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學

2021-2022

Architectural and Design Category

2022-2024

Indestrial Design
(Media and Communication Design Direction)

2024-Present

Interactive Media
(Exchange Term)

Skills

Game Design

#Game Machanism
#Level Design
#Coding
#Game Story
#TA

#Modeling
#Animation

Graphic

#Graphic Design
#UX Design
#Pixel Art

#Video Clipping
#Sound Design

3D Modeling

Others

SAGA

A 3D action game

Intro

The game tells the story of Saga, as a villainous dragon in the traditional sense of the word, fighting against the hypocritical rulers of mankind.

Indivitial Project

2024.1

2024.7

Preface

Due to various reasons, the final production of this project was not completed. However, due to various experiences of continuous experimentation, I have made significant progress in terms of technology. For example, how to use AI behavior trees to control the combat logic of monsters, how to seamlessly switch between different scenes, how to use shaders to render various materials, and so on. Of course, I have also invested a lot of effort in level design, storytelling, and other aspects of construction. Therefore, this work is more used as a technical showcase rather than a complete game demo construction.

Reference

After playing games like *Nier Automata, God of War, Final Fantasy 7 Remake, and Marvel's Guardians of the Galaxy*, I wanted to make an action game myself and experience every aspect of the design.
Therefore, how to design the core system of the game - combat - becomes very important. These games inspired me on how to design the connection between actions. And it's not just about hitting cool skills, it's also about having a lot of other mechanics embedded in it. In addition, these games inspired me to combine narrative with scene exploration. Keeping the player fighting with the goal of knowing where the story is going.

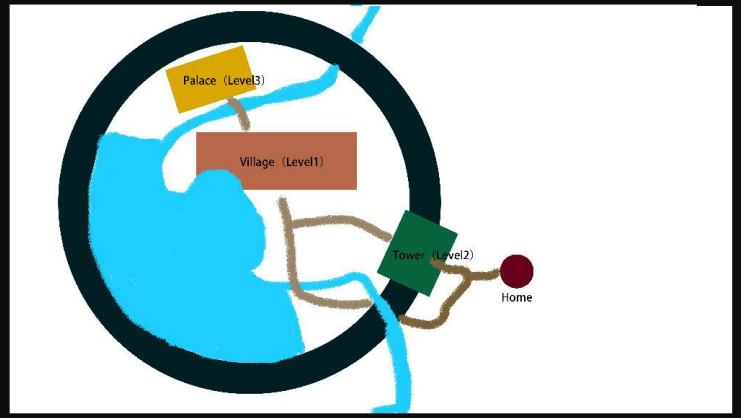
Narrative

The war between humans and dragons lasted a thousand years. The humans control a village that is easy to defend. One day Saga, the dragoness, suddenly discovers a cave behind a waterfall that allows her to proceed directly into the village. By destroying it inside, you can open the mechanism and eventually open the way to the palace. But does all the resistance make sense? The character who is the bad guy still ends up having his sins written down in history. However, it's enough to make the two races truly reconciled.

Gameplay

The core of the game lies in the fact that the player attaches himself to become different attributes by playing different combos. And in battle, attacking enemies with different attributes will yield different benefits. At the same time, the game will add a certain amount of puzzle elements in the boss battle.

Level Design



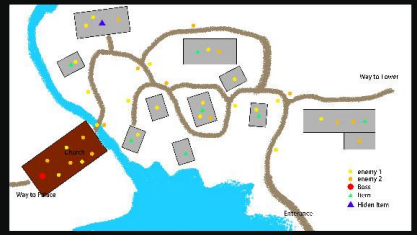
The overall game flow is linear, with players controlling the protagonist Saga to enter the village from a hidden cave in the same open world.

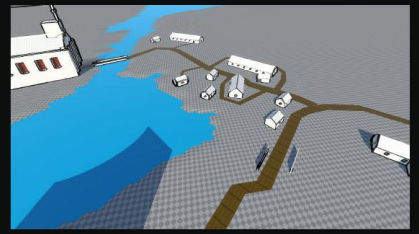
· Level 1: The player defeated the villagers all the way to the church, fought against the boss located in the church, and obtained the key to unlock the tower.

· Level 2:The player goes to the tower to close the castle's shield, only to find a hidden basement here. And the boss in the basement is the key to opening the castle gate.

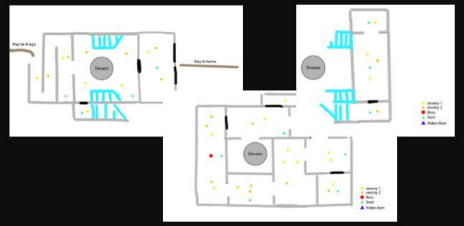
· Level 3:Players go through hardships and come to the castle to fight against the Hero King, only to discover that the disaster of the dragons was actually planned by the Queen. In the end, the player controlled Saga to defeat the queen and win peace between humans and dragons.

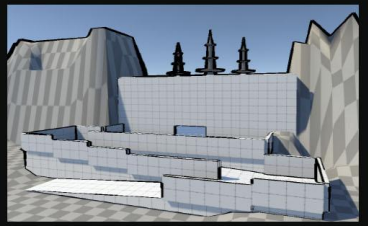
Level1



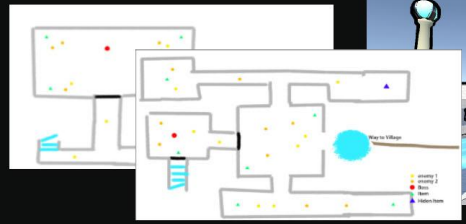


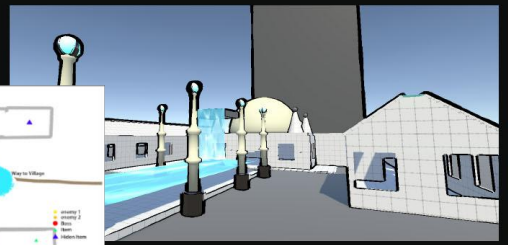
Level2





Level3

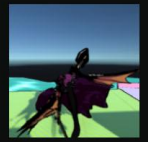




Combat System

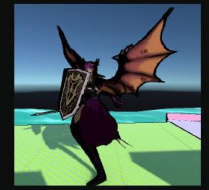
Combo System

The game's combo system uses a combination of light and heavy attacks, and incorporates a combo system. When players press light attack and heavy attack in sequence, they will release derivative skills according to the skill table.Skills will enchant players' swords with different attributes to produce varying damage effects on different enemies.

Player Input	Code Translation	
	1 2 3 4	
L	a b	
R	1 2 a	
	a 1 b 2	

Defence

Players can enter defense posture and receive damage reduction by pressing the defense button. In the first few frames when the defense posture is activated, it will enter an invincible state.



Shooting System

Players can use mana to launch fireballs for long-range attacks by activating shooting mode and adjusting their perspective.

Coding

Enemy AI

Relationship of Enemy Class

Enemy Class

In terms of the control logic of the enemy script, I chose to use inheritance classes for code writing. Firstly, the Enemy class was defined to write the basic monster behavior logic. Generally speaking, monsters are divided into three stages: patrol, chase, and battle. When monsters patrol randomly at several points, they will emit rays to scan objects in front of them. When they scan multiple times, the player will enter the chase phase. When the distance is close enough, it will enter the combat phase. When the player disappears from view for a long time, they will return to the patrol phase.

Attacker Class

The logic of melee monsters is relatively simple, just inherit Enemy's logic and define its attack methods. Usually, a melee monster will chase after a player until one side dies.

Attacker Boss Class

Shooter Class

Remote attack monsters are relatively complex. They do not need to approach the player during the chase phase, but they need to determine their position to avoid getting close to the player and avoid obstacles blocking their path.

Shooter Boss Class

The logic of BOSS also continues the logic of ordinary monsters of the same type. On top of that, specific BOSS battle start events need to be added for each monster to replace the patrol phase. And each boss also has a corresponding death event, which is used to control the opening and closing of the door to advance the level process.

BOSS Battle

In BOSS battles, the main test is the player's ability to observe the relationship between the field and BOSS characteristics.



In church battles, the boss's breakthrough skill is very powerful and can shatter the wooden chair in front of him. But once exposed to light, it will continue to burn and enter a state of blood loss. Players can use ranged attack skills to shatter the glass windows of churches and lure bosses into being illuminated by light.

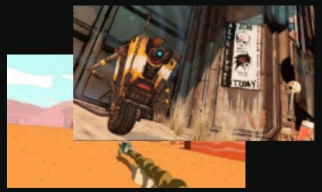


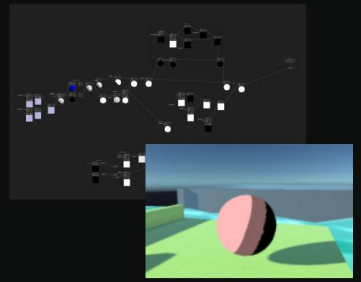

In basement battles, players can only deal damage to bosses by destroying the mechanisms behind the walls. There will be four lights on the wall that will light up in random colors after a period of time. Players need to use ranged attacks to hit the corresponding color lights in order to open the mechanism door, destroy the mechanism, and defeat the boss.

Technical Art

Outlin Cartoon Shader

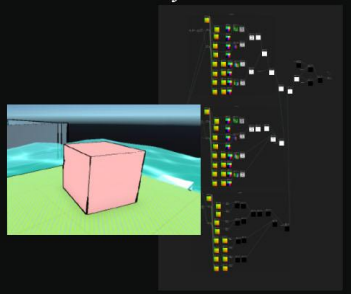
The art style of the game is influenced by games such as *Borderlands* and *Sabel*, and using cartoon style coloring and post-processing strokes can bring a cartoonish feel to the game graphics.



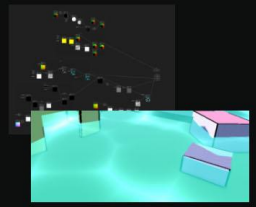


Firstly, the lighting information in the scene is collected and multiplied based on the normal vectors of the object surface to obtain the lighting information. Then, the Step function is used to clearly segment its color. In order to meet the production requirements, I also created a shader version that can be additionally affected by lighting, as well as a version that can be colored in three different colors on objects.

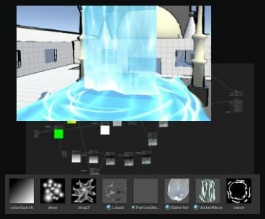
In the post-processing stage, each pixel of the screen image is convolved for edge detection. The main types of detection include three: color, normal, and screen depth. Finally, I colored the detected edges and added some noise to create a hand drawn effect.



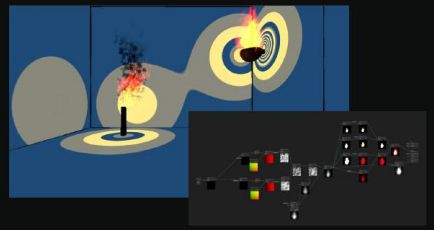
Water Shader



The water element special effects in the game mainly include water surface effects and waterfalls. The pattern style is mainly drawn through Voronoi, and the water variation effect is achieved by changing the UV, normal, and particle effects over time.



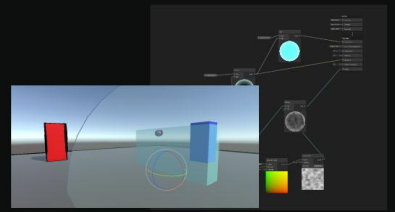
Fire Shader



I also designed two types of flame effects for indoor and outdoor use in the game. The outdoor effects are created using particle systems, while the indoor effects are created using textures. By multiplying different noises and associating UV with time, dynamic flame effects can be presented.

Ice Shader

The special effects production of ice properties is relatively simple, mainly involving the birth and melting of ice. Most of the effects can be achieved using particle systems.



Character Art Pipeline

AI Generated Concept Art

Retopology And Texture Drawing

Design Concept

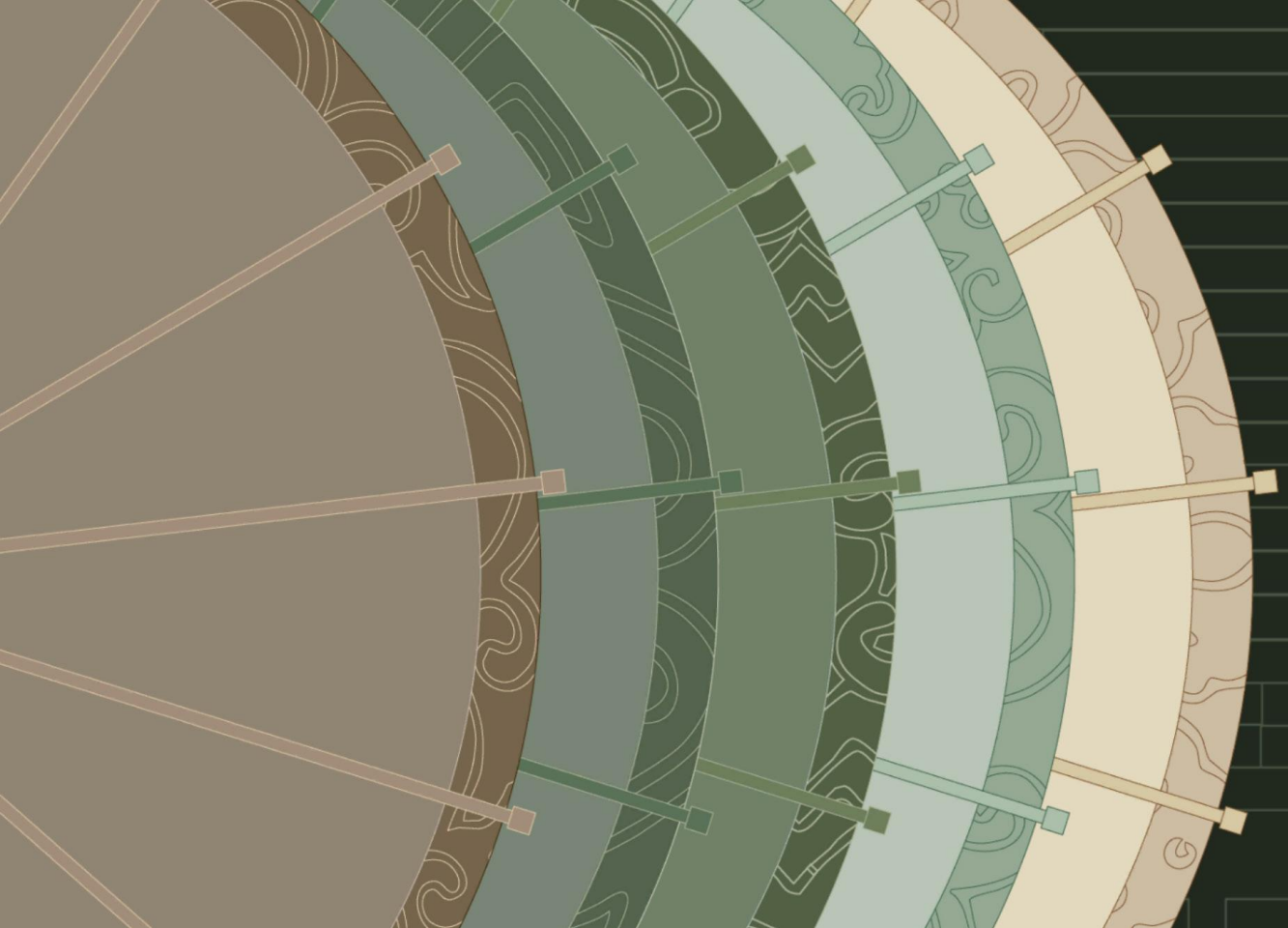
The design inspiration for this character comes from the teacher using AI to generate words such as dragon, girl, warrior, etc. When creating AI, I incorporated many game elements and styles, including Dark Souls, Hades, and more.

Low Poly Model

High Poly Model

In-game Rendering Test

Finally, place the model in the game scene and adjust its size, shape, and material to ensure that the style of the model matches the that of the game and that the animation of the model can be used.



乐诗
PROSODY

Group Project

2023.9-2023.12

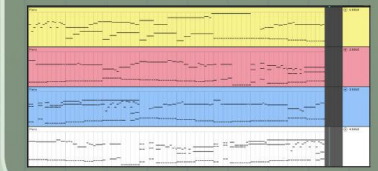
Role: Producer

Programmer
Game Designer
TA

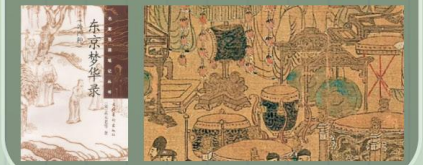
Background

This project is in collaboration with Tencent, and aims to use the game medium as an experiment to express the poetic meaning of Chinese classical poetry. We believe that music is a good medium to express this abstract emotion and experience in the game. After analysis, we have two clear goals.

Target1: Through rhythm games, music track combination, let people feel the poetry through music in the experience.



Target2: Reflect ancient Chinese folk customs and culture in *A Dream of Splendor* and related paintings through narrative and art in games.



Reference

Hi-Fi Rush inspired us to integrate sound design with background music in the rhythm game part.

Chants of Sennaar inspires us to deal with abstract symbols and try to collect and combine them as one of the game mechamics.

Narrattive

Fengyue House was the most renowned teahouse in Bianjing, the capital of the Northern Song Dynasty. The protagonist, Wu Wei, was a young servant at the teahouse, known for performing traditional Chinese folk songs, often facing reprimands from the manager, Sipo. One day, he stumbled upon an ancient Musical Umbrella from the era of Emperor Zhaozong of Tang, which granted him the ability to draw melodies from all things in nature. He used this magical umbrella to draw musical inspiration from all things and used music as a language to cheer up those who are frustrated in society.

Character Design

Player - "I". He was originally an unknown young musician in Fengyue House.

Wu Wei

The central NPC in Chapter 1 is a talented man who failed the imperial examination three times.

Liu Yong

The woman in charge of the waiters in Fengyue House is rigid and inflexible, strict and fierce.

Si Po

Game flow

Opening CG

STEP1

Enter the first scene

STEP2

Talk to NPC to get quests

STEP3

Find Interactive objects in scenes

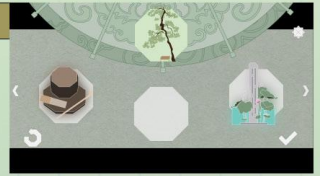
STEP4

Pass the rhythm sub-game,
obtain the corresponding music clips,
and unlock new spaces.

STEP5

All sub-games are completed,
collect all the music clips,
and pass the level after the correct combination.

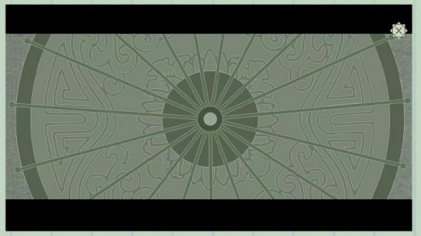
STEP6

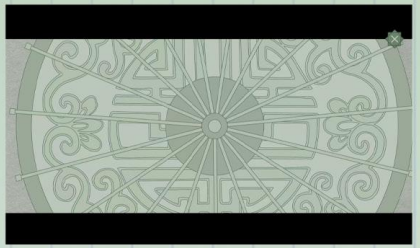


Rhythm Game

music&graphic

The background composition of the rhythm game is a rotating umbrella, corresponding to the items obtained by the characters in the storyline. The protagonist, Wu Wei, formally draws inspiration from various items using this magical umbrella and records them as musical segments.

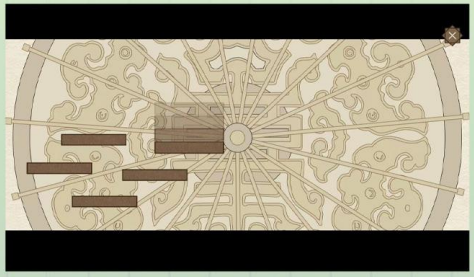


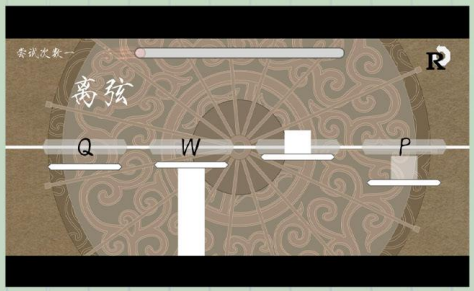


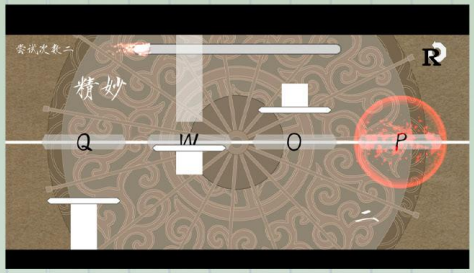
gameplay design

Unlike traditional rhythm games, this rhythm game is not simply about hitting falling blocks to score points. In this game, the player must hit an entire segment of the rhythm game in order to pass the level and obtain the corresponding musical segment. Additionally, when the player fails to hit a block, the game will only provide the accompaniment of the beats. Only when the player successfully hits a block will the corresponding audio be played. This brings a sense of personal musical experience to players as if they are playing the music themselves.

In terms of gameplay experience, the game takes inspiration from games like Dark Souls and Sekiro. Players gradually build up a complete melody from a state of confusion, just as in those games. It is a process of continuously gaining a sense of achievement. This sense of achievement reaches its climax when the player completes a level. After exploring a relatively peaceful scene, players enter the next rhythm game challenge.

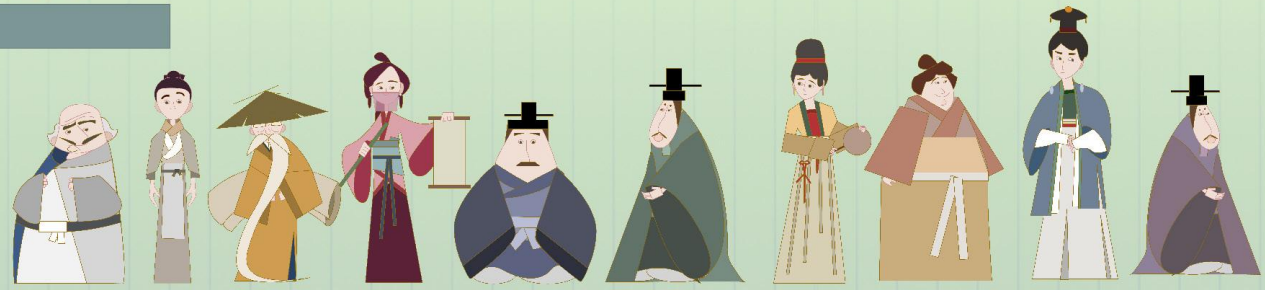






Game Art

assets



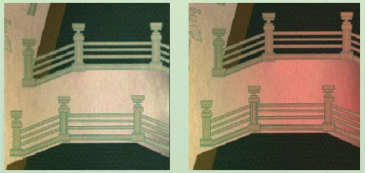
reference

Chinese ancient painting style

Line Sketch Stippling Perspective No Shadows

Game Art

teleporter states



after lighting processing

Open after getting the Musical Umbrella

Open after getting the first Musical Fragment

Open after getting the second Musical Fragment

Open after getting the third Musical Fragment

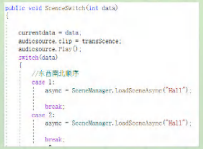
Coding

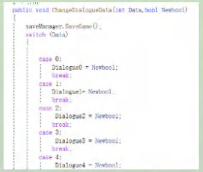
main game part

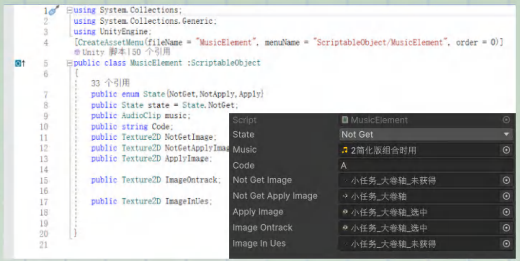
I use GameManager to centrally manage scene switching, dialogue nodes, item acquisition, etc. Automatically save the game when the player reaches a certain node.

In order to facilitate management and subsequent reference in the UI, I manage each music fragment globally using the ScriptableObject script.

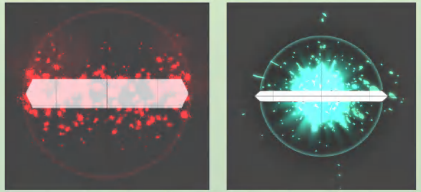
Therefore, the specific system logic is that the player changes the state of the ScriptableObject through interaction, and the state is read and stored by the Gamemanager. When other systems need to access MusicalFragment, they can directly access the corresponding code.







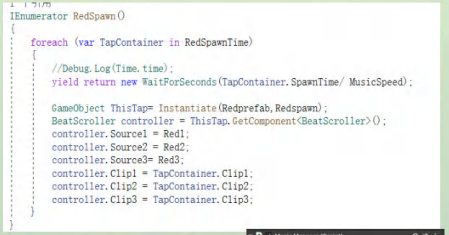
VFX

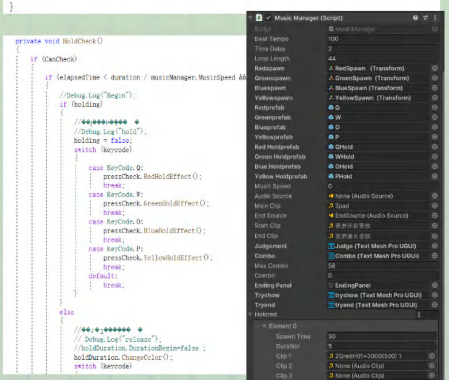


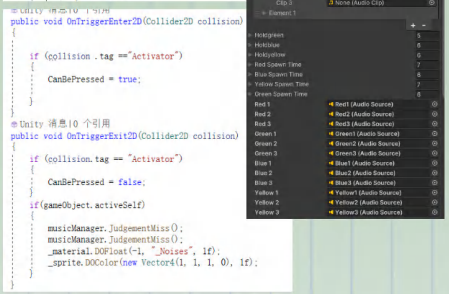
rhythm game part

In the music game part, I use a specific MusicManager to manage each song in a unified manner. And the note intervals and corresponding note interfaces are exposed, so that students who are engaged in music creation in the group can make changes easily.

I designed two different types of notes, Tap and Hold, and their different corresponding logics. They are processed uniformly in the judgment area. Since our music game needs to play according to the moment of pressing, it means that each track has at least 3 music players to cope with the audio reverberation effect.







Intro

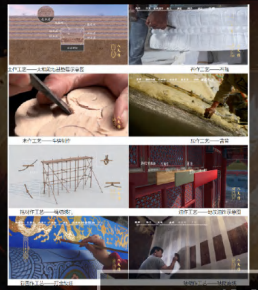
“Archi Masters“ is a very interesting simulation game where You will play the role of an ancient Chinese architect, completing corresponding tests to determine who is the best architect.

During this period, you will experience the complete construction process of ancient Chinese official architecture, and compete with your opponents about the construction speed, and determine the final winner!

If you enjoy ancient Chinese architecture and competitive games, then ”Archi Masters‘”will be an exciting gaming experience that you cannot miss.

Game Goal

This game project comes from a course assignment I gave, in which the task was to promote China's intangible cultural heritage through paper media. When I accept this proposition, I associate it with the vitality that games can radiate in the new era. Starting from the research results of intangible cultural heritage inheritance, this work summarizes the ways to inherit culture. The fundamental purpose of this approach is to develop potential users who are interested in intangible cultural heritage and become truly knowledgeable about it. Through a simple and joyful board game process, players will learn about the basic construction process of ancient Chinese architecture and further develop an interest in this culture. Subsequently, read the relevant materials, and finally obtain a comprehensive understanding of the intangible cultural heritage of official ancient building construction techniques through online searches.



Intangible Cultural Heritage

Extracting inspiration and transforming it

Game Production

Design and sell according to preferences

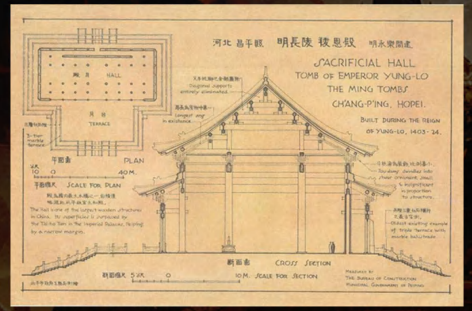
Target Audience

Search for more information after becoming interested

Early Explorations

Inspiration

I majored in architecture during my freshman year and am very interested in traditional Chinese architectural structures. Among them, architects like Liang Sicheng are very charming to me. He connected Chinese architecture with Western architectural theory by measuring traditional Chinese architecture and drawing them. Another book that has had a profound impact on me is called “Yingzao Fashi”, which records various ancient Chinese architectural techniques. And I refined some of these elements and incorporated them into my game.



Reference

I want to use chess pieces to abstractly express the construction process of buildings, while adding card elements to provide strategy, and finally introducing dice to provide a certain degree of randomness.

The game did not have a clear reference, but some game inspiration was drawn during production.

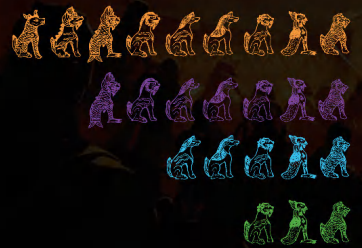
Game Background

Eight major construction techniques of the Forbidden City

In 1734, the "Engineering Construction Principle" promulgated by the Ministry of Industry provided detailed regulations and procedures for various housing projects in the Qing Dynasty, including names, methods, labor, and materials. Therefore, at this time, the system of official building construction techniques was quite complete, and relatively mature rules and regulations were formed.

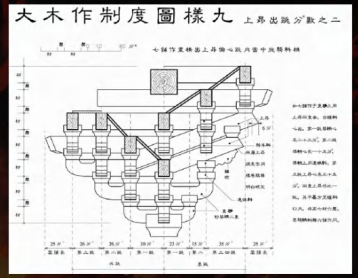
In the process of constructing and repairing the Forbidden City, a complete and strict set of techniques for constructing ancient palace buildings has been formed, the most important of which are the "Eight major construction techniques ".The "Eight major construction techniques " are composed of 8 items: tile work, wood work, stone work, scaffolding work, ground work, oil paint work, color drawing work and paper work. They are also called "official-style ancient architectural construction techniques". These techniques also played an important leading role in the development of ancient architectural technology in China, especially in the northern region.

Among them, Chinese traditional architectural craftsmanship for timber-framed structures has been included in the Intangible Cultural Heritage List by UNESCO.



The relationship between the game and Yingzao Fashi

"Yingzao Fashi" is an architectural work written by Li Jie in the Song Dynasty. It is an official specification book for architectural design and construction issued by the Northern Song Dynasty. It is the most complete architectural technology book in ancient China.



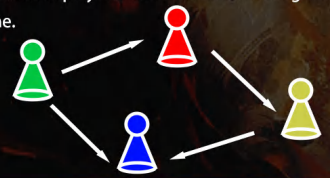
In the game, the words on the grid on the player's path represent these eight construction techniques and their operating steps. The origin of these terms comes from books such as "Yingzao Fashi" and "Engineering Construction Principle" that record traditional Chinese building construction techniques.

The book spends a lot of space describing work limits and material examples. For example, when calculating labor quotas, we first divide workers into medium workers, long workers and short workers according to the length of the four seasons. The working value is based on medium-sized workers, and long-term and short-term workers are reduced and increased by 10%. Military workers and hired workers also have different quotas. Secondly, for each type of work component, the work value calculation method is stipulated according to the grade, size and quality requirements - such as the distance of transportation, the downstream or countercurrent of the water flow, the softness and hardness of the processed wood, etc. The language elements and symbols in these books were also used by me in the design of the cards.

Game Flow

SET UP

Before the game starts, players decide the order of playing cards, arrange the positions clockwise and execute the round. Each player draws 3 cards at the beginning of the game.



ROUND STARTS

Before the start of each round, players take turns rolling dice to determine the effect of the current round's field based on the points.If the player who rolls the dice is not satisfied with the result, they can choose to roll it again.

Civil Construction The upper limit of cards played by all players in this round is +1.	Favorable Weather In this round, all players can play cards that are one level higher than their own intermediate level.
Unstable Politics Destruction cards used by all players in this round are not counted in the number of uses.	Exorbitant Taxation All players reveal their cards and choose to discard one of the highest-level cards.
Massive Craftman When all players use construction cards in this round, the construction progress will be additionally +1.	Personnel Market The construction progress of all players in the field will be +2.

DRAWING STAGE

The player draws 2 cards and discards 2 cards.The number of cards in a player's hand is always 2+x, and x is the player's current level.

CARD PLAYING STAGE

Players can only play cards of the stage they are in and below. The upper limit of the number of cards played in each round is 2. When the upper limit is reached, the round is forced to end.

END STAGE

Players can announce the completion of the advancement/ending, change the upper limit of hand cards or declare victory of the game when the advancement conditions/ending conditions are met.

NEXT PLAYER.....

NEXT ROUND

When a player announces that his building is completed, the game ends and that player wins.

GAME OVER

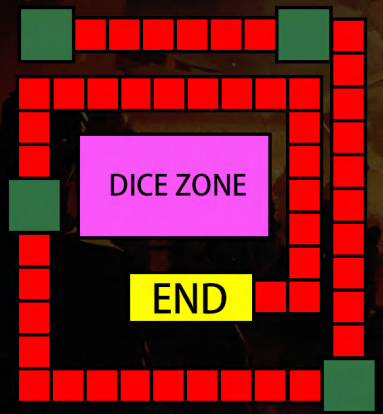
When the "Talent Market" field effect appears three times in total, the game ends and the player with the lead in progress wins; when there are players with the same progress, the player with the earlier shot wins.

Map Design

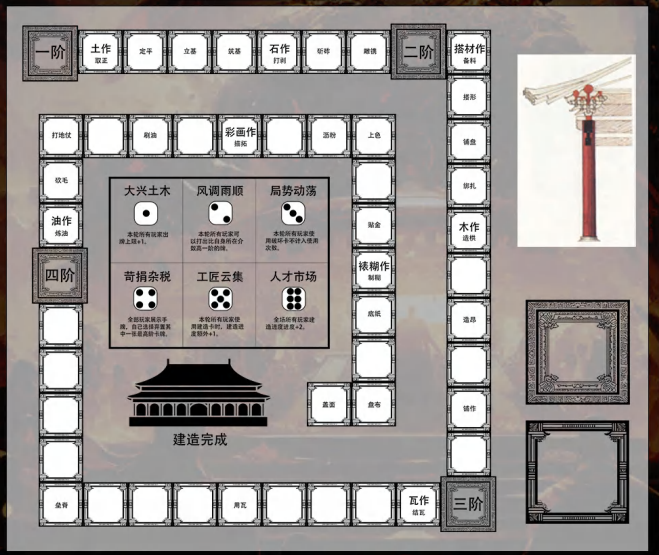
FIRST DRAFT

At the beginning, for the simplicity of the map and saving space, I chose to place the Dice Zone in the middle of the map, with the player's route winding around it. As the game progresses, the player continues to approach the end point in the center

In subsequent tests, it was discovered that the linear map was too repetitive, which reduced the game's replayability.

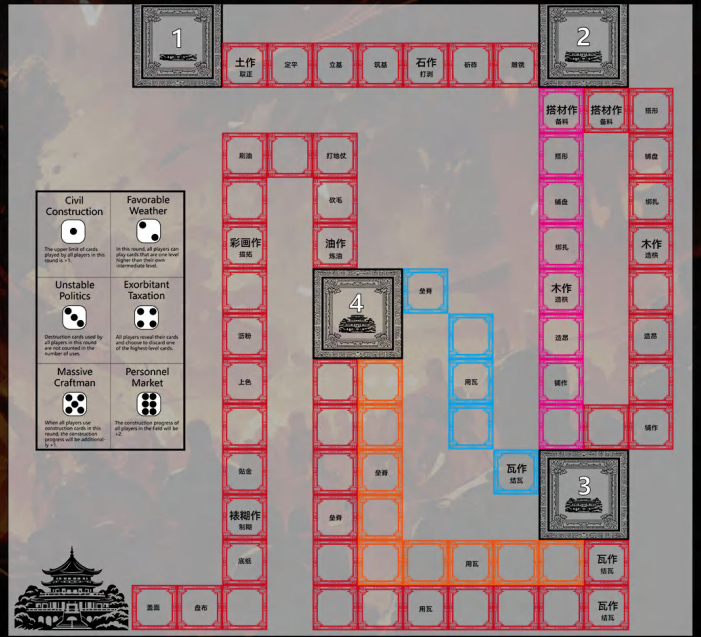


MIDDLE DRAFT

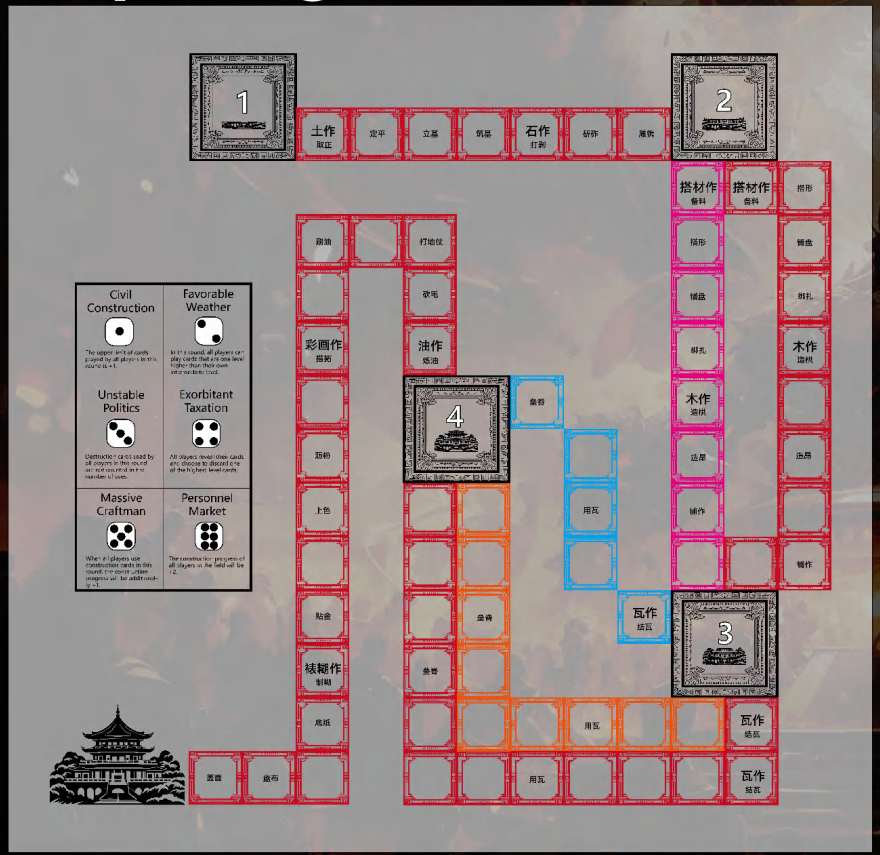


FINAL DESIGN

In order to solve the problem of uniformity, the final version of the map was designed with selectable branches and different colors were chosen to distinguish them. Move the Dice Zone to one side to make it easier for players to observe and play.



Map Design



Normal road

Entry condition: All players are eligible

Road Effect: Players can choose to skip their own card playing stage during their own turn. If you do this, it will be considered as playing Middle Gong.

Expressway

Entry conditions: Except for the first player who reaches the second stage, players can choose to enter and must reset all their hands before entering.

Road effect: Players can gain an additional point of construction progress when using construction cards; Reduce the maximum playing limit by one per round; Cannot be specified as a target by a damaged card.

Normal road

Entry condition: All players are eligible

Road Effect: Players can choose to skip their own card playing stage during their own turn. If you do this, it will be considered as playing Long Gong.

Expressway

Entry conditions: Except for the first player who reaches the third stage, players can choose to enter and must reset all their hands before entering.

Road effect: Players can gain an additional point of construction progress when using construction cards; Reduce the maximum playing limit by one per round; Players can choose to skip their own card stage during their own turn. If this is done, it will be considered as making a sacrifice.

Demon road

Entry condition: All players can discard all item cards and hand cards placed in front of them before entering.

Road Effect: Players can use fourth level cards. All construction cards played by players are considered as Short Gong, and damage cards are considered as Arson.

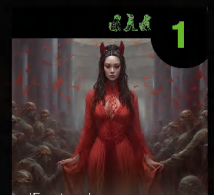
2 \ 3	Normal road	Expressway	Demon road
Normal road	Players can choose to skip their drawing stage during their own turn. If you do this, it will be considered as playing Short Gong.	Players can discard any combination of three "Short Gong/Arson" cards at the same time. If they do so, it will be considered as Sacrifice.	All construction cards played by players are considered as Short Gong, and destroy cards are considered Arson. Players can choose to skip their drawing stage during their own turn. If this is done, it will be considered as playing an Employ Overseer.
Expressway	When a destroyed card is designated as the target, players can play any destroyed card and render it invalid.	Players can choose to skip their drawing stage during their own turn. If this is done, it will be considered as Playing an Arson.	All construction cards played by players are considered as Short Gong, and destroy cards are considered Arson. Players can choose to skip their drawing stage during their own turn. If this is done, it will be considered as playing an TouLiang Huanzhu.

Card Design


4
Card Level
|Opportunity card
IMPERIAL GOLDBAR
Card Type
After use, place it in front of the player, and they can play 2 more cards in the playing stage starting from the next round.
Card Effect
Strict rewards and punishments are the key to governance.——Qianfu Lun
Reference

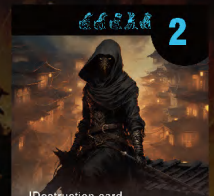

1
|Construction card
SHORT GONG
Construction progress +1 after use.


1
|Destruction card
ARSON
Make the designated player construction progress -1.


1
|Event card
SACAR-IFICE


2
|Event card
CHAOS

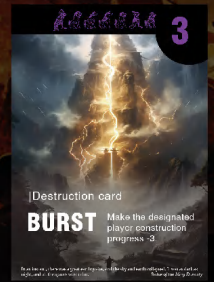

2
|Construction card
MID GONG
Construction progress +2 after use.


2
|Destruction card
TOULIANG HUANZHU


2
|Oppotunity card
EMPLOY OVERSEER


3
|Opportunity card
MASTER GUIDANCE


3
|Construction card
LONG GONG
Construction progress +3 after use.

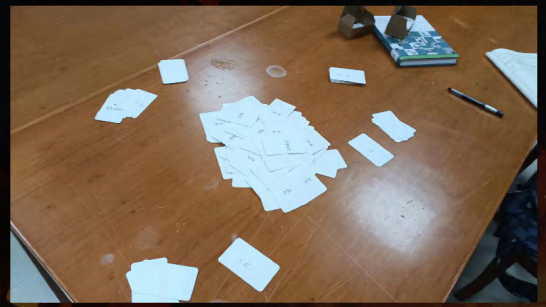

3
|Destruction card
BURST
Make the designated player construction progress -3


3
|Opportunity card
DESTROY BLUEPRINT


4
|Destruction card
INCITE STRIKES

Game Test

GAME PROTOTYPE

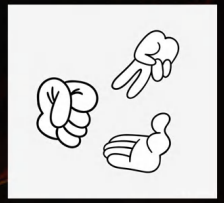


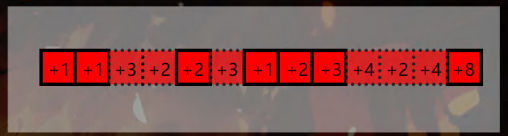
GAME PRODUCTS

PROBLEM AND SOLUSION

SIMPLIFICATION OF GAME MECHANICS

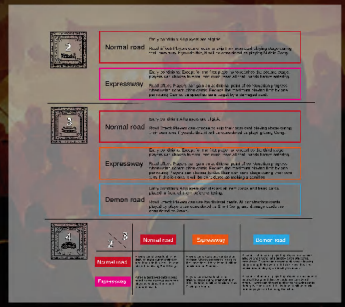
In the early stages of game design, I added many interaction mechanisms to the game. For example, in version 1, players have a character card, and during the card drawing stage, they need to find a player and player Stone Scissor Cloth with them. When winning, they can obtain more cards with the corresponding values on the character card. In version 2, each grid has a corresponding value, and players can choose whether to go to the current grid or skip directly and go to the next stage of the grid. However, in the testing, it was found that stone, scissors, and cloth would consume a lot of time and were not very related to the core mechanism construction of the game. It can also cause significant negative experiences for unlucky players. The extensive calculation of numerical values can also cause a significant burden on players and prolong the game duration. Therefore, both mechanisms were ultimately removed.





RHYTHM AND TIME CONTROL

Another important issue that needs to be addressed during testing is controlling the duration and rhythm of the game. In terms of duration control, I choose to provide players with more construction cards and overall weaken their destructive ability. In terms of controlling the game rhythm, we can see that different branch routes are provided for players on the game map. In this game with clear progress, the catch up mechanism is also very important. On the one hand, through politics (between players), but without completely disrupting the gaming experience of the leaders; On the other hand, it exists in the game mechanism to avoid snowballs getting bigger and bigger. Therefore, we have given players different route choices, accompanied by different buffs, to return the game's progress control to the players.



Nutrivision

XR Application Design

An innovative AR tool that helps you track your daily meals by recognizing food items in real time, instantly displaying their nutritional information, such as calories, macronutrients, and portion sizes. This tool not only simplifies meal logging but also empowers users to make healthier choices by providing actionable insights directly through their camera, making nutrition tracking seamless and engaging.

Indivitial Project

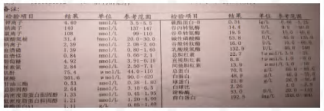
2024.7-2024.10

Nutrivision

Inspiration

#Personal Experience

During every physical examination, I receive reminders from doctors on how to improve my body's deficiencies in various trace elements. In general, the doctor's advice can only exist briefly in my daily life and be forgotten soon after. Every time I go shopping at the supermarket, eat in the cafeteria, or order takeout, I only care about the food I like. This imbalance ultimately leads to a suboptimal nutritional state. And this state needs to be gradually improved on a daily basis rather than overnight. After trying some methods, I still haven't found an effective way to remind me to consume food reasonably.



Sub-health

Lack of Plan

#Pain Point

·How to assist people in managing their nutritional intake more comprehensively?
·How to meet human needs in interaction and enable users to use it in the simplest way ?
·How to increase user stickiness and ensure user retention?

#Design Thinking

This situation calls for a user-friendly solution, one that integrates technology to guide users toward healthy choices seamlessly. The design would need to focus on real-time food analysis, providing clear, personalized information to ensure that his dietary needs are met efficiently. The product should offer convenience while being easy to use, enhancing the shopping experience for those with strict dietary requirements.

#Research question

·Is a similar situation a common phenomenon in society?
·How do people nowadays deal with this situation?
·Is there a new form of technology that can achieve things previously unattainable?

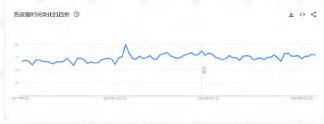
Research

#Desktop Research

Through extensive online research, I explored the existing tools and apps that assist with dietary management, particularly for individuals with chronic conditions like diabetes. Many current solutions focus on calorie counting and general nutrition, but few offer real-time, personalized recommendations during shopping. I identified a gap in tools that can streamline the grocery shopping process for users by providing specific nutritional advice based on individual health needs, especially for people who need to follow strict diets.

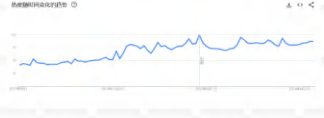
After investigation, in recent years, people's attention to health has been increasing. More and more people are participating in a healthy lifestyle, which is also reflected in their growing health performance. On the other hand, in recent years, due to the impact of the COVID-19 pandemic, more and more people are participating in sports to improve their physical fitness. In this stage, there is a growing demand for health-related apps. More and more people are using mobile apps to help improve their health.

Nutritional and Health Levels of Chinese Residents from 2017 to 2023



"Health" as a Keyword Trend on Google Trend from 2017 to 2023

The average active users and average growth rate of "Keep" fitness app from 2019 to 2022



"Health App" as a Keyword Trend on Google Trend from 2017 to 2023

#User Research

Modern nutrition app users often face issues with unclear health information, difficulty navigating the interface, and inaccurate portion tracking, which limits the app's effectiveness in providing timely dietary guidance.

After interviewing the target users, I summarized similar viewpoints. Most people believe that it is acceptable if there are ways to help remind and control dietary choices. However, the vast majority of people are not willing to spend a lot of time and energy on this.

Name: Zhang Wei
Age: 28
Occupation: Software Engineer
Education: Doctor's
Characteristics: Tech-savvy, Inquisitive

Personal Quote:
"Embracing technology is about enhancing my life and well-being. Every time I analyze my dietary habits with an app, I'm not just logging data; I'm discovering the keys to my vitality. I see health as a coding challenge, where every nutritious choice contributes to the ultimate program: a happier, healthier me."

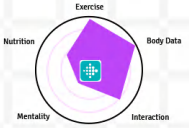
Name: Ti Yan
Age: 52
Occupation: Retired Teacher
Education: Bachelor's
Characteristics: Cautious, Detail-oriented

Personal Quote:
"Living with diabetes means every meal is a careful calculation. I often find myself frustrated in the supermarket, searching for suitable foods while battling the confusion of labels and choices. Technology could be my ally, helping me quickly identify healthy options that fit my dietary needs. With the right tools, I hope to make informed decisions that support my health without the stress."

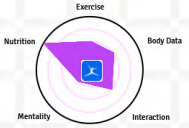
#Market research

Analyzing the current market, we find that while there are numerous health and nutrition apps to choose from, most of them either focus on the interaction between exercise and psychology or simply provide basic tracking of diet with limited variety of nutrients tracked. However, there are few apps that are targeted at in-store shopping or daily meal choices, as real-time decision-making is crucial; and there are also few apps that include more nutrients in the detection range. The market lacks an integrated solution that combines health monitoring with real-time product recommendations. This provides an opportunity for products that fill this gap, especially for those who want to manage their fine-tuned health status and need to make smart choices quickly while shopping or eating.

Finch: Self-Care Pet



Fitbit

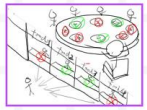


MyFitnessPal

Design Opportunity

#Real-Time Nutritional Guidance

There is an opportunity to develop a tool that provides real-time nutritional information and personalized recommendations while users are shopping. By scanning food labels or recognizing products through visual recognition, the app can immediately assess if the product fits the user's dietary needs, reducing the stress and time spent deciphering labels.

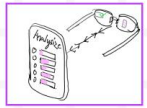


#Personalized Dietary Recommendations

A key design opportunity lies in personalizing the experience for users with specific health conditions. The tool could allow users to input their dietary restrictions, track their nutritional goals, and generate dynamic recommendations tailored to their unique needs, helping them maintain a healthier lifestyle with minimal effort.

#Cross-Platform Integration

The product could integrate across multiple platforms, including mobile apps and augmented reality (AR) glasses. This would provide users with flexibility in accessing nutritional guidance, whether they are browsing online grocery stores, navigating a physical supermarket, Strolling around the commercial street, or using AR to overlay information directly on the products they see.

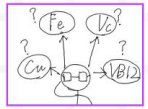


#Sustainability and Diversity

In addition to dietary needs, this tool can provide insights into diversity and sustainability. By understanding the origin and transportation of the product, we can provide users with environmentally conscious dietary plans and encourage them to try food from different cultures.

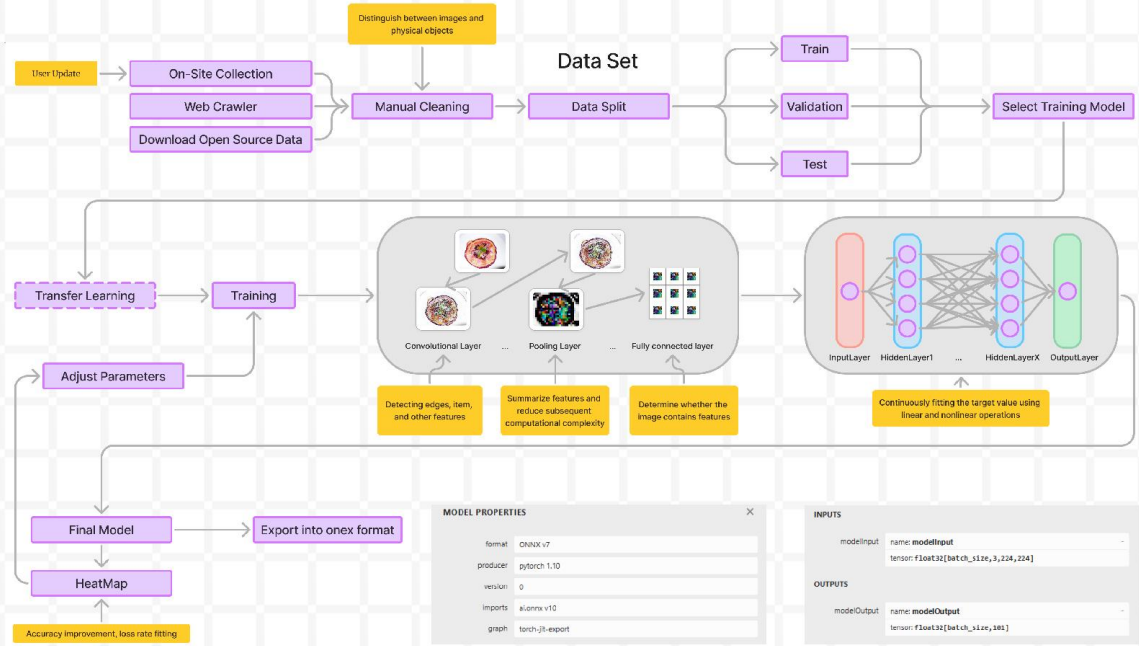
#Educational and Entertaining Features

This tool can serve as an educational platform to provide users with knowledge and advice on healthy eating. By continuously attracting users to explore and understand the ingredients in different foods through illustrated guides, freshness can always be maintained in daily biochemical experiences.

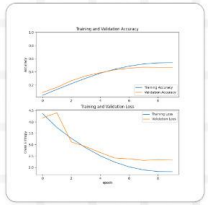


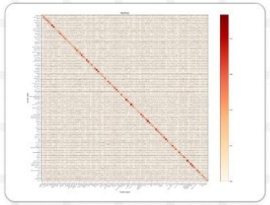
Product Frame and Technical Support

Image Classification Model Machine Learning

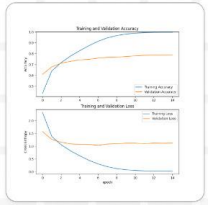


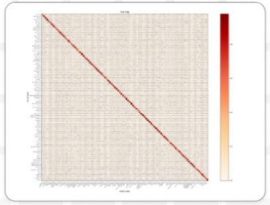
Model optimization



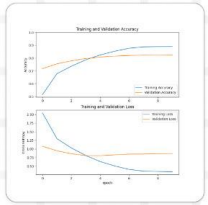


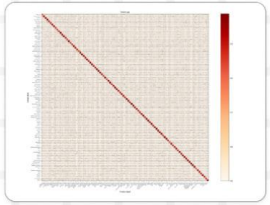
In the experiment, I used the open-source dataset food101 to construct the dataset. And use ResNet50 to train the model. After 10 rounds of training, the results are shown in the figure. The model has tended to fit, but its accuracy in the validation set is only around 46%, with recognition accuracy for multiple categories even less than 20%.





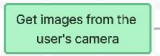
Then, I had decided to use pre trained models for transfer learning. It could be seen that the model achieved excellent results in the training set this time, with an accuracy rate of 99%; However, the monetization in the validation set varies greatly, with an accuracy rate of only about 76%. However, there are still a large number of classifications with an accuracy of less than 50%. This indicates that the model suffers from severe overfitting during training.

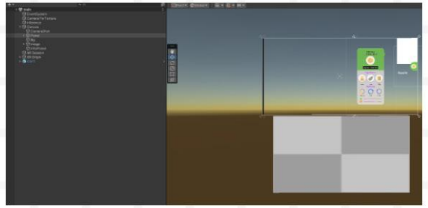


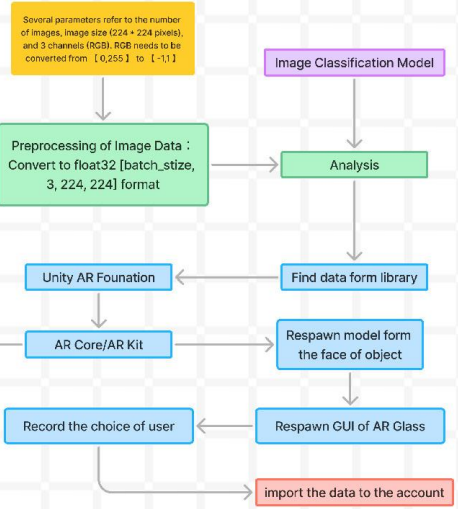


After various means of parameter adjustment, such as data augmentation and regularization, learning rate optimization, loss function improvement, and other methods, the model results were significantly improved compared to the previous time. The accuracy of the model ultimately reached 82%, and the heat map of the model showed that its accuracy in identifying various types of food exceeded 50%.

AR Application







Code

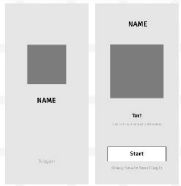
```
void InitCamera()
{
    // WebCamDevice[] devices = WebCamTexture.devices;
    for (int i = 0; i < devices.Length; i++)
    {
        Debug.Log("Camera available: " + devices[i].name);
    }
    // Check available cameras
    if (WebCamTexture.devices.Length > 0)
    {
        string camName = WebCamTexture.devices[0].name;
        // Initialize the camera resolution of the device's camera
        // Server-aware preprocessing, the scale and offset were calculated to crop and resize the original ima
        //and then the image was resized to 256 resolution using Blit.
        webcamTexture = new WebCamTexture(camName, Screen.width, Screen.height, 30);
        rawImage.texture = webcamTexture;
        webcamTexture.Play();
    }
    else
    {
        Debug.LogError("No camera device detected!");
    }
    // Reset aspectRatio into normal scale
    fitter.aspectRatio = (float)webcamTexture.width / (float)webcamTexture.height;
}
```

```
IEnumerator RunModelRoutine(byte[] pixels)
{
    //change image to a suitable format
    Tensor tensor = TransformInput(pixels);
    var inputs = new Dictionary<string, Tensor>
    {
    { INPUT_NAME, tensor }
    };
    //start execute the model
    worker.Execute(inputs);
    // get result
    Tensor outputTensor = worker.CopyOutput(OUTPUT_NAME);
    //change to list
    List<float> temp = outputTensor.ToReadOnlyArray().ToList();
    //search outcome
    float maxP = temp.Max();  // get max confidence level
    int indexR = temp.IndexOf(maxP);  // get the index of it

    //output results when max confidence level > 50%
    if (maxP > 0.5f)
    {
        //update UI logic
        uishow.ImageShow();
        resText.text = labels[indexR];
        //respawn Icon Model
        RespawnIcon();
    }
    else
    {
        //resText.text = "no enough confidence level";
    }
    tensor.Dispose();
    outputTensor.Dispose();
    yield return null;
}
```

```
# Define the training process
def train(train_loader, model, criterion, optimizer, epoch, params):
    metric_monitor = MetricMonitor()  # Set up the metric monitor
    model.train()  # Set the model to training mode
    nBatch = len(train_loader)
    stream = tqdm(train_loader)
    for i, (images, target) in enumerate(stream, start=1):  # Start training
        try:
            # Try to load the data onto the device
            images = images.to(params['device'], non_blocking=True)  # Load data
            target = target.to(params['device'], non_blocking=True)  # Load labels
        except Exception as e:
            # Catch exceptions for data loading failure and skip this batch
            print(f"Skipping current batch {i} due to data loading failure: {e}")
            continue  # Skip this batch

        output = model(images)  # Feed data into the model for forward propagation
        loss = criterion(output, target.long())  # Calculate the loss
        f1_macro = calculate_f1_macro(output, target)  # Calculate F1 score
        recall_macro = calculate_recall_macro(output, target)  # Calculate recall score
        acc = accuracy(output, target)  # Calculate accuracy score
        metric_monitor.update('Loss', loss.item())  # Update loss
        metric_monitor.update('F1', f1_macro)  # Update F1 score
        metric_monitor.update('Recall', recall_macro)  # Update recall
        metric_monitor.update('Accuracy', acc)  # Update accuracy
        optimizer.zero_grad()  # Clear gradients
        loss.backward()  # Backpropagation of loss
        optimizer.step()  # Update optimizer
        lr = adjust_learning_rate(optimizer, epoch, params, i, nBatch)  # Adjust learning rate
        stream.set_description(  # Update progress bar
            "Epoch: {epoch}. Train.      {metric_monitor}".format(
                epoch=epoch,
                metric_monitor=metric_monitor)
        )
    return metric_monitor.metrics["Accuracy"]["avg"], metric_monitor.metrics['Loss']["avg"]  # Return results
```

```
# Preprocessing and data augmentation for the training set
def get_train_transforms(img_size=224):
    return albumentations.Compose(
        [
            albumentations.Resize(img_size, img_size),
            albumentations.HorizontalFlip(p=0.2),  # Lower the probability of horizontal flip
            albumentations.VerticalFlip(p=0.15),  # Lower the probability of vertical flip
            albumentations.Rotate(limit=45, p=0.15),  # Reduce rotation angle and probability
            albumentations.RandomBrightnessContrast(p=0.2),  # Reduce the probability of brightness and contrast changes
            albumentations.ShiftScaleRotate(shift_limit=0.05, scale_limit=0.05, rotate_limit=0, p=0.15),
            albumentations.Cutout(num_holes=2, max_h_size=img_size//15, max_w_size=img_size//15, p=0.15),
            albumentations.Normalize(mean=[0.485, 0.456, 0.406], std=[0.229, 0.224, 0.225], max_pixel_value=255.0),
            ToTensorV2(p=1.0),
        ]
    )
```

Application Frame

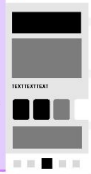


Splash Screen

#App Logo and Slogan
#Loading animation and message

Home Screen

#Button Navigation Bar: Switch to other Pages
#Scan Button: A prominent button that users click to enter AR scanning mode or just use phone to scan image
#Daily Summary: Displays today's intake summary (total calories, protein, vitamins, etc.)
#History Button: Shows the user's food intake for the past few days, and allow user to manage future plans

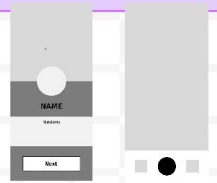


Favorite Screen

#Image guide: Display all the foods included in the application and show the user's level of preference for the food
#Search bar: Users can search for specific foods or search for related foods based on nutrition labels
#Food ingredient interface: displays various raw materials and processing methods for food, as well as estimated nutritional content
#Click on the details page: Display specific information about the food, nutritional components,displayed like a Pokémon Pokédex
#Charts: Displays daily nutrient intake (e.g., pie chart or bar graph)
#Detailed Information: Shows specific intake amounts for each nutrient

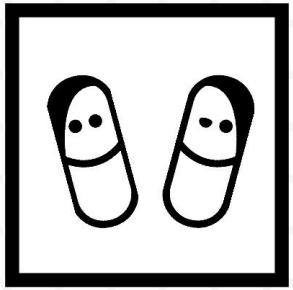
Scan Screen

#Button Navigation Bar: Switch to other Pages
#Real-time camera view: Users can scan food using their camera
Recognition Result Box: When food is recognized, it displays the food name and an image
#Nutritional Information: Shows the recognized food's nutritional content (calories, protein, fats, vitamins, etc.)
#Add to Favorite Button: Allows users to add the recognized food to their daily intake record



AR Interaction

#Food identification: Analyze the nutrition of food when it is identified, and provide recommended ratings based on the user's nutritional content today
#Food image UI: After clicking, it displays specific information about the food, including its main key elements. Provide food ingredients and check if there are any adverse reactions to the food the user has eaten today
#Tip: An app IP avatar and its evaluation of the food will appear next to it
#Mode switching: Users can switch between shopping and dining modes. This will provide users with different suggestions, with daily dietary data analysis based on daily food intake, while shopping will be tracked over the long term.
#User preference: Recommend favorite foods to users when they can meet their nutritional requirements. If a certain nutritional food is not included in the favorite list, continuously recommend previously unreleased foods to users



The main visual identity is inspired by pill capsules and is designed to convey that the app can help users recover their health in the same way that medicine does. The image of the two pills has a humorous expression, narrowing the distance with the user. At the same time, the two pills pose in a "V" posture to give positive feedback to the user.

Typography

Header

Aa	Aa	Aa
Headline SemiBold 48px	Headline SemiBold 32px	Subtitle 1 SemiBold 25px

Body

Aa	Aa	Aa	Aa	Aa
Body 1 Regular 17px	Body 2 Regular 12px	Body 3 Light 14px	Body 4 Regular 10px	Body 5 SemiBold 10px

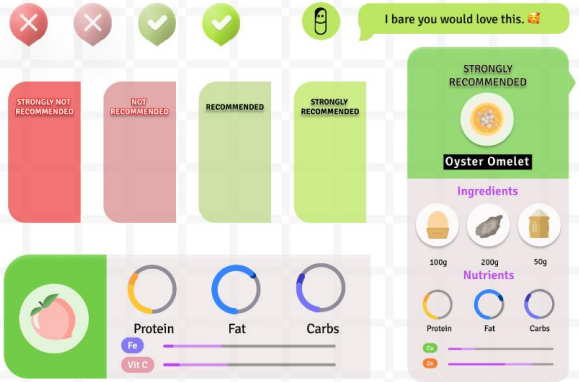
Colours

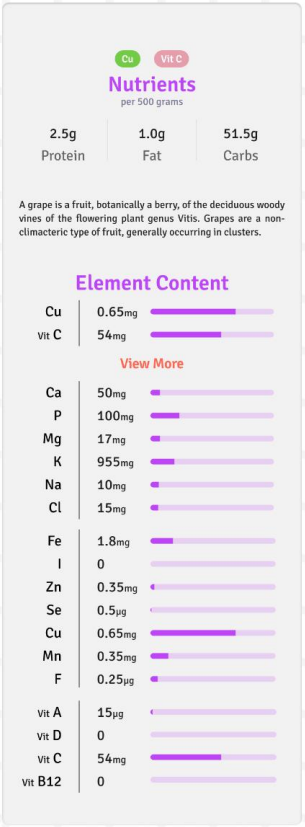
Theme

Element Type

Favorite Scale

Components

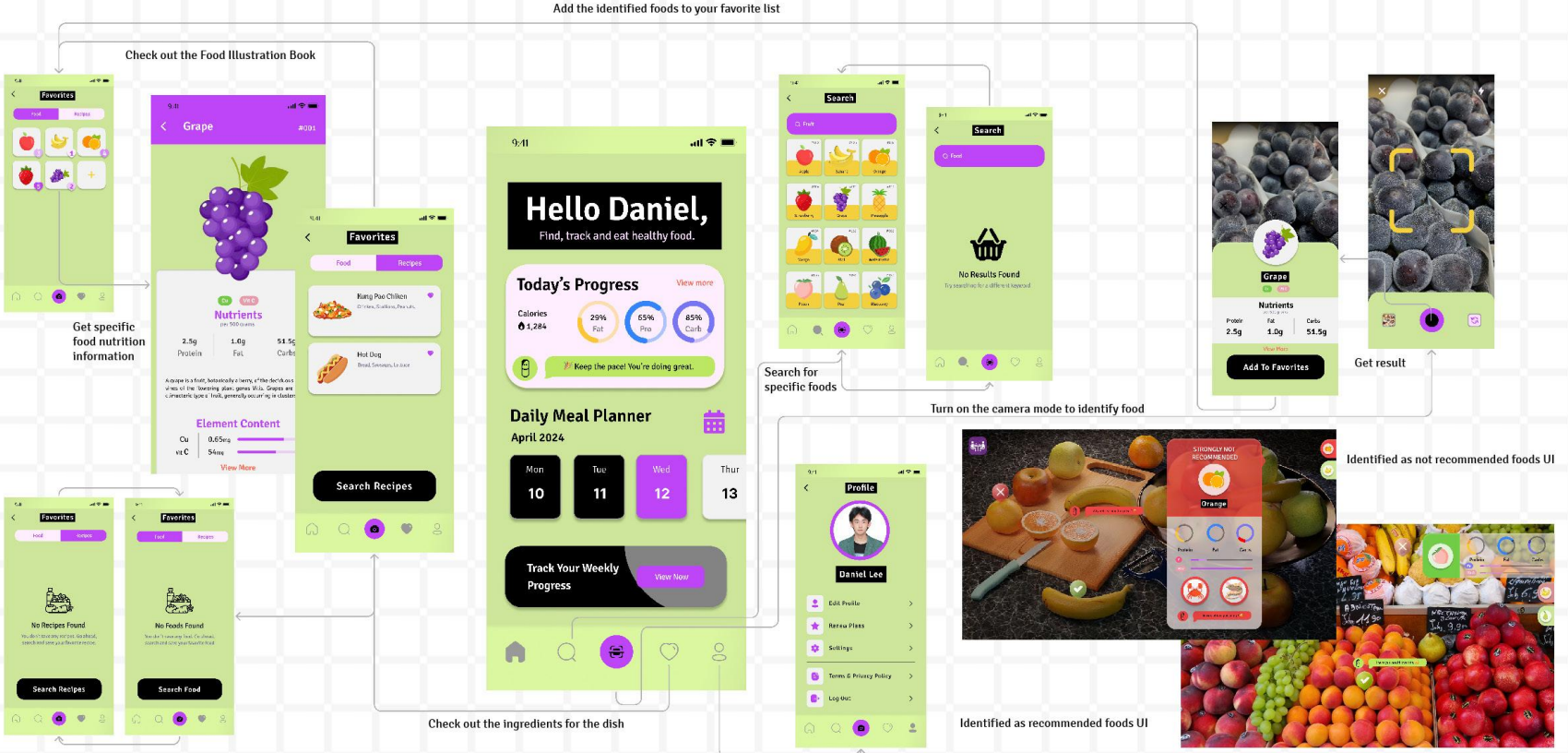




Splash Screen

In the loading screen, we show the user the visual style of the app and determine the core of the user-friendly functional flow. With slides on display, users can see how the app can help them.

Nutrivision



Player will embark on a daring quest to shatter one nightmare after another, all while desperately aiming to escape the nightmare world by using speed to shatter nightmares. Navigate challenging levels, defeat unique nightmares, and unleash special abilities.

With stunning visuals and an immersive storyline, can you awaken from this nightmarish ordeal?

Indivitial Project
2023.7 — 2023.9

INSPIRATION

Bipolar Disorder, also known as Manic-Depressive Disorder, is a mental health condition characterized by extreme shifts in mood, energy, and activity levels.

The onset of bipolar disorder is believed to be influenced by multiple factors, including genetics, biochemical imbalances, neurophysiology, and environmental factors.

When I watch videos of people exhibiting signs of extreme behavior and irrationality on various websites, I often notice that the majority of comments tend to mock and ridicule them. It got me thinking that perhaps if people were placed in the shoes of individuals living with bipolar disorder, they might gain a better understanding of the origins of this condition. This line of thinking inspired me to create a game centered around a character who struggles with maintaining full control over their actions and emotions.

Celeste is a 2D platform jumping game where players control characters to climb mountains and solve their psychological problems.

When the Darkness comes is a walking simulator whose glitchy and dark tale tries to illustrate the hardships of depression and anxiety through a variety of imaginary digital landscapes.

When conceiving this game, Celeste served as a significant source of inspiration for me. It provided me with valuable insights into the concept of constantly facing and overcoming inner challenges while progressing towards a goal, ultimately attaining a sense of harmony. In the game, players have the opportunity to delve into deep conversations, enabling them to gain insights about their characters and, in turn, learn more about themselves.Another work that has an important image for me is When the Darkness comes, it inspires me to use game mechanics to complete the task of bringing players into the character.

SYMPTOMS

Mania

- talking excessively
- racing thoughts
- hostility
- less sleep
- delusions

Depression

- extreme fatigue
- prolonged sadness
- extreme fatigue
- poor nutrition

Table 4. Comorbidity of CIDI/*DSM-IV* Major Depressive Disorders With Other NCS-R Disorders in the Weighted Part 2 NCS-R*

	MDD Cases With Comorbid Disorders, % (95% CI)			
	Anxiety	Substance Use	Impulse Control	Any
Lifetime comorbidity†				
Lifetime (n = 1530)	59.2 (56.2-62.1)	24.0 (21.8-26.2)	30.0 (27.9-32.1)	72.1 (69.8-74.4)
12-Month (n = 622)	67.8 (63.6-72.0)	27.1 (23.1-31.1)	37.3 (33.8-40.8)	78.5 (74.8-82.3)
12-Month comorbidity‡				
12-Month (n = 622)	57.5 (53.3-61.7)	8.5 (6.4-10.6)	16.6 (13.0-20.2)	64.0 (59.6-68.5)
Temporal priority of MDD§				
Lifetime (n = 1103)	13.7 (11.0-16.3)	41.3 (35.5-47.1)	16.9 (12.5-21.3)	12.3 (10.4-14.2)
12-Month (n = 488)	14.6 (10.4-18.8)	49.2 (41.6-56.8)	20.8 (14.2-27.3)	12.6 (9.0-16.3)

Abbreviations: CIDI, Composite International Diagnostic Interview; *DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; MDD, major depressive disorder; NCS-R, National Comorbidity Survey Replication.
*Anxiety disorders include panic disorder, generalized anxiety disorder, phobias (specific, social, agoraphobia), posttraumatic stress disorder, and obsessive-compulsive disorder. Impulse control disorders include intermittent explosive disorder, pathological gambling, bulimia, conduct disorder, oppositional defiant disorder, and antisocial personality disorder. Substance use disorders include alcohol or drug abuse or dependence.
†Entries are the percentage of respondents with either lifetime or 12-month MDD who also meet lifetime criteria for at least 1 of the other CIDI/*DSM-IV* disorders that were assessed in the NCS-R.
‡Entries are the percentage of respondents with 12-month MDD who also meet 12-month criteria for at least 1 of the other disorders.
§Entries are the percentage of respondents with either lifetime or 12-month MDD and at least 1 of the other disorders whose age at first onset of MDD is reported to be younger than the age at first onset of all comorbid disorders in the category under consideration (ie, either anxiety, substance use, impulse control, or any disorder).

The above figure shows the study of genetic epidemiology on the probability of complications in severe depression (Kessler, R. C., Berglund, P., Demler, O., et al. (2003). The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). JAMA, 289(23), 3095-3105.

Brain Structure Abnormalities:

These abnormalities involve regions such as the prefrontal cortex, amygdala, hippocampus, and striatum, which are involved in emotion regulation, reward processing, and cognitive function.

Neurochemical Imbalances:

Bipolar disorder is associated with dysregulation of neurotransmitters and hypothalamic-pituitary-adrenal (HPA) axis.

Genetic Factors:

Bipolar disorder has a strong genetic component, with heritability estimated to be around 80%.

Enviromental Factors:

These factors include significant life stressors, childhood trauma, substance abuse, sleep disturbances, and certain medications. Stressful life events, such as the loss of a loved one or major life transitions, can be associated with the onset of bipolar episodes.

PATHOLOGHY

THERAPY

Drug therapy

Commonly used drugs include lithium, antidepressants, antipsychotics, and anticonvulsants. These drugs can help stabilize emotions and alleviate symptoms of depression and manic episodes.

Psychotherapy

Cognitive behavioral therapy (CBT) and interpersonal therapy are commonly used psychotherapy methods. They can help patients understand their emotional fluctuations, learn coping skills, improve interpersonal relationships, and provide strategies for coping with stress and recurrence.

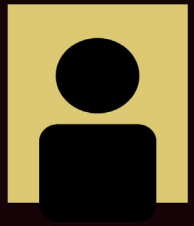
Lifestyle management

Lifestyle changes maintaining regular sleep, avoiding stress and mental stress, establishing a stable schedule, and avoiding drug or alcohol abuse. Regular exercise and a healthy diet also help maintain physical and mental health.

Support system

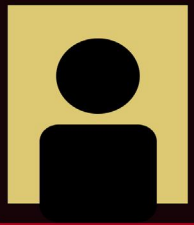
Seeking support from family, friends, or support groups can provide emotional support, understanding, and encouragement. Participating in support groups or seeking psychosocial support services can help patients share experiences, learn coping skills, and reduce loneliness.

INTERVIEW



Pusa Identify: Cured patient

After being diagnosed with illness and taking medication for 5 years, I basically returned to normal state through self-regulation exercise, fitness, and medication assistance, which is also the best state for bipolar disorder as described by psychiatrists. During a follow-up visit, my psychotherapist told me that doctors and medication only helped me by 20%, while my own self adjustment and healing process accounted for 80%.



Tarzan Identify: Patient

Many people believe that bipolar disorder patients have very negative thoughts based on their own understanding, such as being emotional, having a heavy mindset, and having weak stress tolerance. So for bipolar patients who are more severe than depression, as someone who doesn't want to harm others but only gets sick, being driven away very maliciously by others will only worsen the condition, and nothing good can happen.

WHAT CAN THIS GAME DO

This game replays the life of a bipolar disorder patient in a dream using flashback. I hope that after players experience this game, they can truly understand their mental state and provide assistance in their daily lives. For patients themselves, understanding pathology is the first step towards resolving their own troubles and moving towards normalcy. Through this game, they can have the courage and self-control to face difficulties in the future.

GAMEPLAY

Press "D" to speed up

Press "A" to slow down

SPEED<5 5<SPEED<7 7<SPEED

Jet will change body color due to different speed.

ITEMS

After picking, Jet will not be affected by collision deceleration for 10 seconds.

After picking, Jet will break through the maximum speed limit in the x-axis within 10 seconds.

After picking, Jet will quickly slow down in a short period of time.

ENEMIES

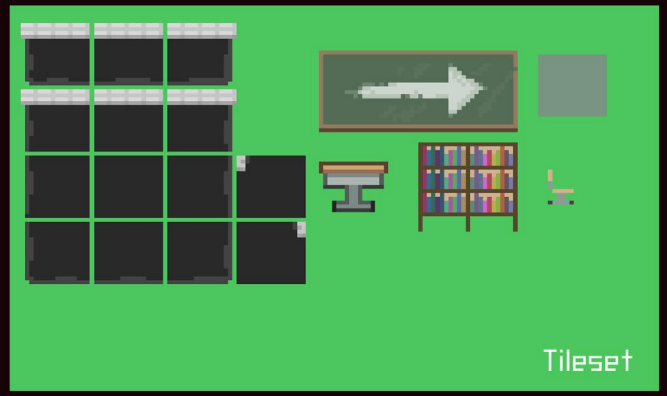
They can only be defeated by colliding with normal monster NPCs when the speed is greater than 5, otherwise Jet will be killed.

They can only be defeated by colliding with elite monster NPCs when the speed is more than 7, otherwise Jet will be killed.

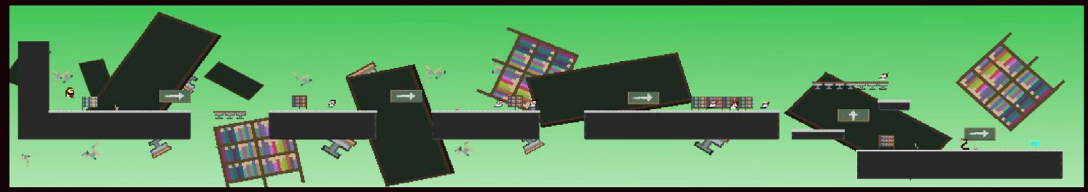
When the speed is less than 5, Jet can pass successfully without harming friendly NPC.

LEVEL 1 EXAMINATION ROOM

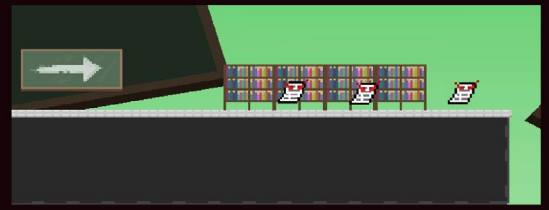
Level Building



The initial layer of the nightmare revolves around Jet, the protagonist, and his childhood fear of exams.
In this level, players will gain a fundamental understanding of Jet's movement and interaction abilities.



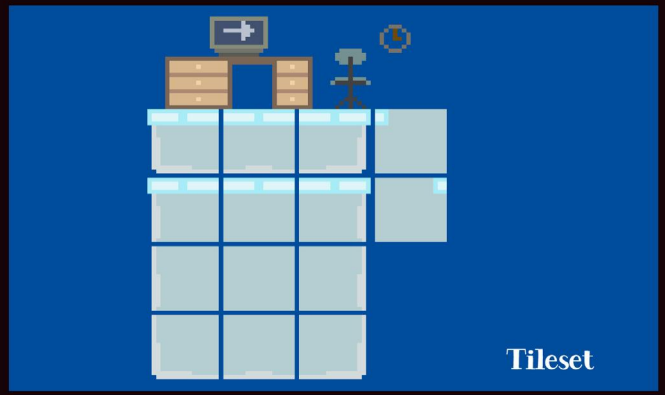
The first jump and battle against the nightmare.



Trible hit!

Using gravity to defeat the enemy.

LEVEL 2 COMPANY



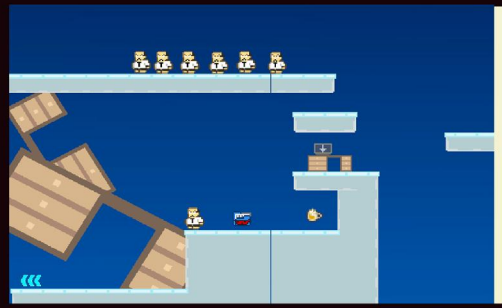
Tileset

As Jet grew up and entered the workforce, the pressure he faced continued to intensify, leading him to develop a habit of excessive drinking. Alcohol became his coping mechanism at this stage.

Level Building

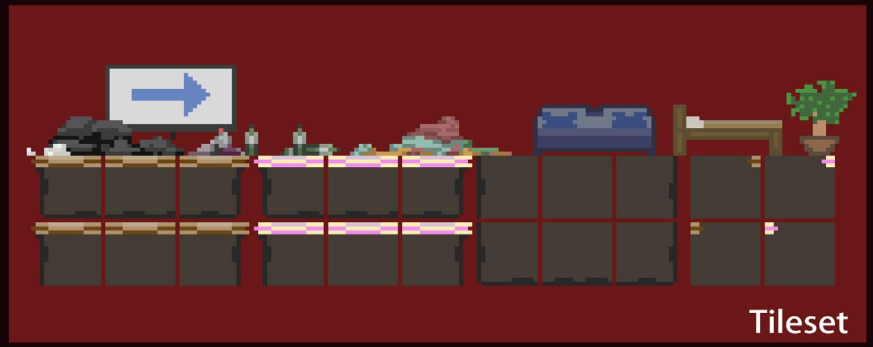
Quantum leap.

Find the hidden alcohol and conquer enemies that were previously unbeatable.



Plot Murder: Destiny of Death.
New Choice: Whether to Continue Drinking.

LEVEL 3 HOME



Watch your speed.

Combination uese of drugs.

Extreme Jump.

After being dismissed from his job, Jet's mental health deteriorated further, exacerbating his struggles. He retreated to his home, where he gradually succumbed to drug abuse. It is crucial to intervene and regulate Jet's actions, as he is on a collision course with the only person in his life who genuinely cares for him - his beloved grandmom.

Level Building

FINAL LEVEL

In the final level, Jet will meet his biggest nightmare - himself. This comes from a nightmare generated within him, familiar with all of Jet's weaknesses. Monsters that have appeared in all previous levels will reappear, and the scene will become even more chaotic. To escape the nightmare, Jet must defeat it.

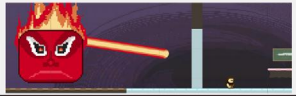
Level Building

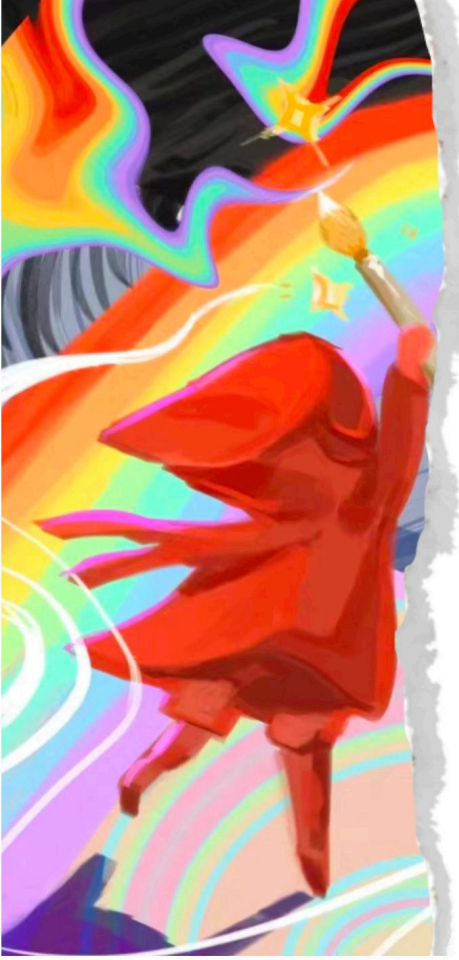
Summoning monsters: Boss will summon a group of monsters as support and collaborate with them in combat. Players must first deal with the monsters before they can approach the boss.

Cure himself:The boss will restore a certain amount of health for himself.

Key position conversion: Players are unable to control characters using A and D at the beginning, replaced by two randomly provided key positions.

Flame Ejection: The boss will eject flames from their mouth, and players need to avoid damage in a timely manner.





INTRO

Group Project 2023.10

Personal Role: Producer
Director
Programmer
Game Designer

Background

In the small town of Artovia there was a painter named Professor Elysium. His presence brought a lot of vitality to the town, he colored the town, decorated the town, and made this ordinary town full of vitality. Elysium has a magic paint pot that he never lets anyone touch because it is a bottomless paint pot and is very dangerous if knocked over. After hearing rumors of the magic pot, Sparkle, Elysium's young apprentice, got curious and sneaked into the studio to try and get the pot off an easel to see what was going on. But, uh, he slipped and broke the paint jar. The bottle burst, a catastrophic accident, and the colorful paint gushed out, mixing in an endless black that flooded the town. Now the town is dull and lifeless because its beauty and color have disappeared and everything is drowned in black. Players take on the role of Sparkle, a magical paintbrush that allows them to switch between two worlds: the black and white dimension and the spectral world of vibrant memories, rescuing Artovia from being overwhelmed by black and white.

Target Audience

1. Fairy tale themed game lovers
2. 2d platform game enthusiasts

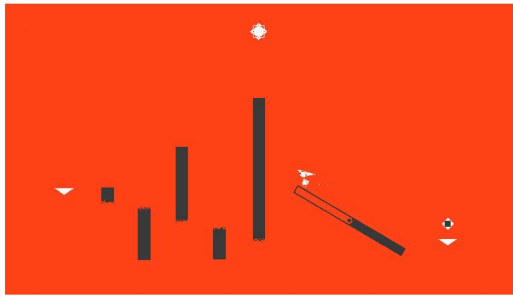
Platform PC

Genre 2D Cartoon/Platform

INSPARATIONS

The inspiration for the game comes from Hue and Biphase. In an illustrative world, players change colors through buttons, resulting in changes in terrain. Through this simplest core mechanism, players can interact with various mechanisms and ultimately reach the finish line.

Hue



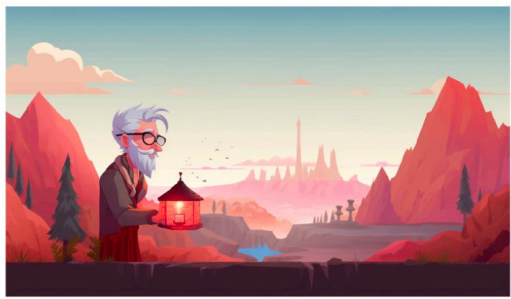
Biphase

USE OF AI

Midjourney

On my end, We used midjourney as my may source of art design. After multiple tryout, I created arts for the animation based on design of game characters and game arts from other members of t the team.

Game BG Concept Art

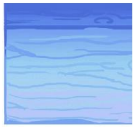


Game Story Concept Art

GAME MECHANIC

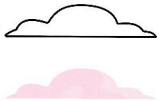
Colored Bricks

Hidden under normal conditions, displayed in color mode.



Cloud

In color mode, the cloud rises to the designated location, while in normal mode, the cloud falls to the designated location.



Thorns

Disappear when the button is triggered.Characters will die directly when they come into contact with the laser.

Button

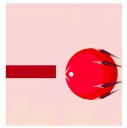
Triggered when colliding with a character or stone, causing the corresponding thorns to disappear.

Box

Can be pushed by the character from both left and right directions.

Laser

Hidden under normal conditions, displayed in color mode.Laser can be obstructed by other objects or walls, and characters will die directly when they come into contact with the laser.



Introduction

This game reflects the theme of Gene AIGame am from multiple dimensions: complexity and simplicity. As a level crossing game, the levels gradually guide players to explore the gameplay mechanism from simple to complex. In terms of gameplay, we have innovated the switching mode, a novel and complex core gameplay mechanism, based on the simple traditional board game gameplay. Players need to cleverly switch between simple contour modes and complex spectral modes to complete the level.

Goal

In each level, players need to collect pigments, color the doors that reach the finish line, and activate them to reach the next level

Keyboard Control

A: Move Left

D: Move Right

Space: Jumping

K: Switching modes

STORY&ART

Story of pre-game animation

Professor Elysium, a renowned painter in the art-centric town of Artovia, possesses a magical paint pot. This pot is used by Elysium to add color to paintings, embellish sculptures, and even enhance the entire town. Elysium has always kept the paint can off-limits, asserting that no one can afford to accidentally spill it.

However, one day, Elysium's youngest apprentice, Sparkle, steals the key to his office and accidentally knocks over the paint jar. The spilled paint spreads throughout the town, engulfing everything in an eternal darkness, resulting in a world devoid of color. Meanwhile, a new world called Spectrumia, brimming with vibrant hues, emerges near the paint jar.

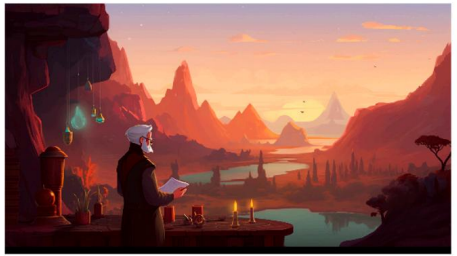
Realizing the dire consequences of her actions, Sparkle seeks the aid of a valiant warrior to venture into Spectrumia and save their world. Spectrumia is a realm filled with color, while Artovia remains trapped in a black and white state. Objects possessing color in Spectrumia have unique properties, while those in Artovia appear as lifeless outlines. The key to progress lies in switching between these two worlds and discovering a path towards a brighter future.

Story of after-game animation

The magical paint, in a mysterious manner, returned to the jar, restoring Artovia to its former colorful glory. However, something seems off as the town now exhibits peculiarities like lavender colored apples, a wooden lake, and a transparent bridge. Despite these strange occurrences, Sparkle, the apprentice, remains unperturbed, finding solace in the fact that everything now possesses color.

Contemplating the situation, one realizes that our perception of reality is shaped by our sensory interpretations. With this in mind, who's to say if this seemingly divergent world might actually be an improvement?

AI art



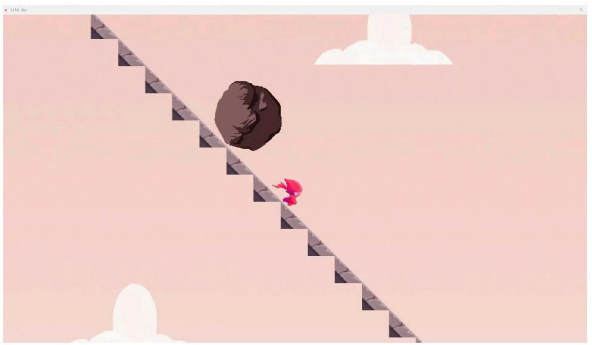
Final Result

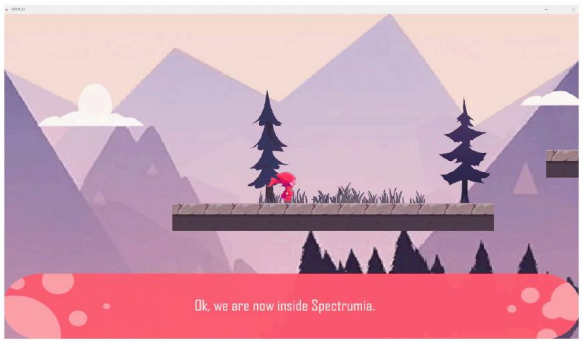
ART

Simple and personalized graphics: Hue's game world is characterized by simple lines and geometric shapes, presenting clear and concise graphics. This style highlights the importance of color, allowing players to better focus on color changes and puzzle solving in the environment.

Gradient and Transition: The color changes in Hue games are often achieved through gradients and transitions. When players change the color of the environment, smooth and continuous transitions appear, presenting a smooth visual effect to the entire game world. The use of gradients and transitions adds artistic layers and aesthetics to the game.

Dreams and Illusions: The artistic style of Hue games also carries a sense of fantasy and illusion. By changing the color of the environment, players can see hidden platforms and paths, creating an incredible feeling. This dreamy and hallucinatory element adds a mysterious and fantastical atmosphere to the game.





UI DESIGN

Tutorial Text

Level 1:
Ok, we are now inside Spectrumia.

See that shining square over there?
That's the paint we're going to collect.
It is also the key that opens the door to the next place.

Let's try the basic movement first.

Press A to move left.
Press D to move right.

Nice!
Let's try jumping.

Press Space

You've learned the most basic moves.
Let's jump to the next nearest ground first.

There's no way ahead?
Don't worry. Try pressing K.

See these two new blocks?
Such colored objects only appear in Colored Mode.
Let's move on.

Don't forget to pick up the paint!
We can't get to the next level without it.

Being blocked?
Press K again to switch back to Colorless Mode.
These blocks will disappear.

Great!
You have mastered how to travel between two dimensions.
Head to the door and enter the next level.

Level 2:
That's a long way from the door.
Try switching to Colored Mode.

There are a lot of those red blocks.
Got to find a way to get past them.

I'll give you a hint:
Take advantage of the ability to travel between two dimensions.
Level 3:
Oops, the level is obviously a lot more complicated this time

Notice that rolling stone in the back?
It will roll forward as soon as the red object disappears.
Make sure not to run into it.

There's a thorn in the front as well.
Unfortunately, the switch to disarm it is also covered thorn.
We need to find a way to disarm it.

To sum up, avoid the stones and remove the thorn.

Level 4:
What is that?
A cloud? !

Clouds are also objects with colors.
I wonder what will happen in different modes.

Test it out and use it to get to the door.

Oh, don't forget to get the paint.

Level 5:
Seriously?
More colored objects ?!

This time with lethal lasers and... A box?
That looks really tricky.

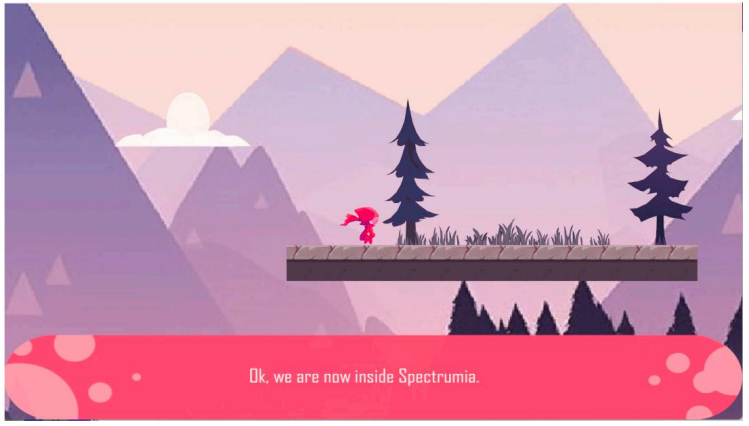
We've got some good news though.
Through the cloud of the previous level I 've gathered some information:

Colored objects retain their shape and attributes in Colored Mode.
Colorless ones lose their attributes and even their existence when in Colorless Mode.

With all you've been through,
I'm sure you can make it

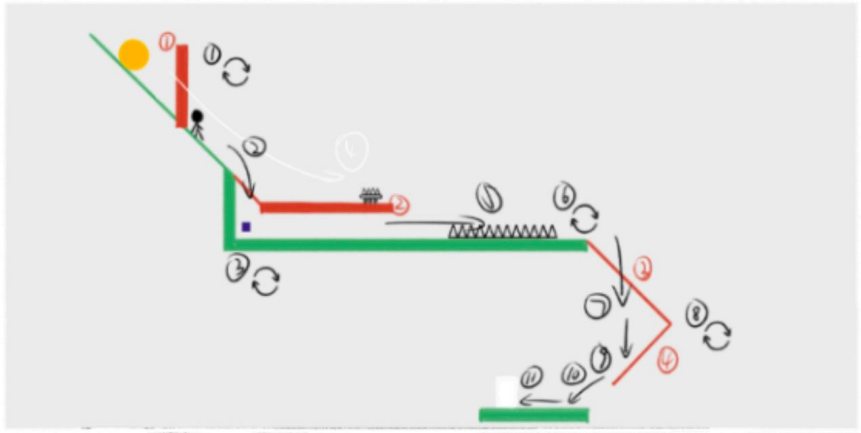
UI Art

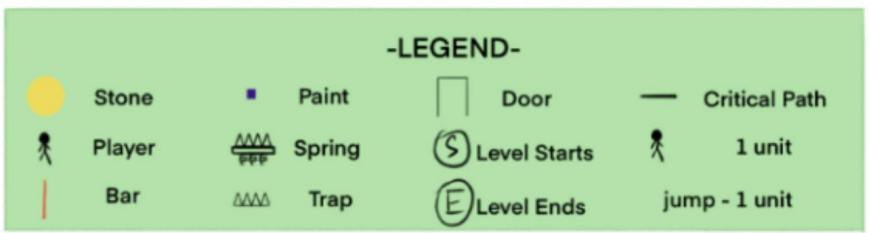
In-game Effect



LEVEL DESIGN

Level 3 Map

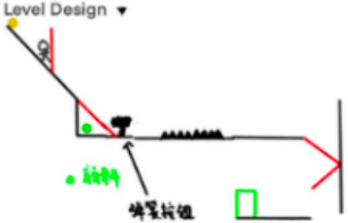




DESCRIPTION

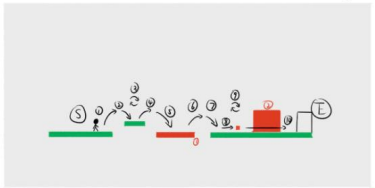
1. Player switches to colorless mode; All bars disappear
2. Player get down to get the Paint
3. Player switches to colored mode; All bars reappear
4. The stone press the spring and destroy the trap
5. Player walks to the edge of bar 3
6. Player switches to colorless mode; All bars disappear
7. Player falls
8. Player switches to colored mode; All bars reappear
9. Player falls onto bar 4
10. Player walks off bar 4
11. Player reaches the door and clears the level

First Draft of Level Design



LEVEL DESIGN

Level 1 Map



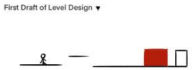
DESCRIPTION

1-2. Player jumps onto the second ground
3. Player switches to colored mode; All bars appear
4-5. Player jumps onto bar 1
6-7. Player jumps onto the last ground
8. Player picks up the Paint
9. Player switches to colorless mode; All bars disappear
10. Player reaches the door and clear the level.

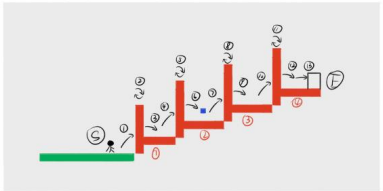
-LEGEND-

Player	Paint	Level Starts	Critical Path		
Bar	Door	Level Ends	1 unit		
			jump - 1 unit		

First Draft of Level Design



Level 2 Map



DESCRIPTION

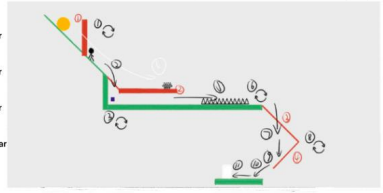
1. Player jumps towards right side of bar 1
2. Player switches to colorless mode; All bars disappear
3. Player lands on bar 1
4. Player jumps towards right side of bar 2
5. Player switches to colorless mode; All bars disappear
6. Player lands on bar 2 and picks up the Paint
7. Player jumps towards right side of bar 3
8. Player switches to colorless mode; All bars disappear
9. Player lands on bar 3
10. Player jumps towards right side of bar 4
11. Player switches to colorless mode; All bars disappear
12. Player lands on bar 4
13. Player reaches the door and clears the level

-LEGEND-

Player	Paint	Level Starts	Critical Path		
Bar	Door	Level Ends	1 unit		
			jump - 1 unit		

First Draft of Level Design

Level 3 Map



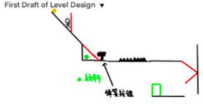
DESCRIPTION

1. Player switches to colorless mode; All bars disappear
2. Player get down to get the Paint
3. Player switches to colored mode; All bars reappear
4. The stone press the spring and destroy the trap
5. Player walks to the edge of bar 3
6. Player switches to colorless mode; All bars disappear
7. Player falls
8. Player switches to colored mode; All bars reappear
9. Player falls onto bar 4
10. Player walks off bar 4
11. Player reaches the door and clears the level

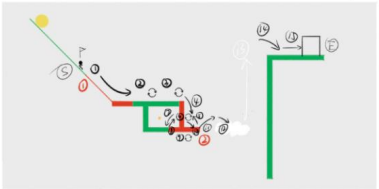
-LEGEND-

Stone	Paint	Door	Critical Path		
Player	Spring	Level Starts	1 unit		
Bar	Trap	Level Ends	jump - 1 unit		

First Draft of Level Design



Level 4 Map



DESCRIPTION

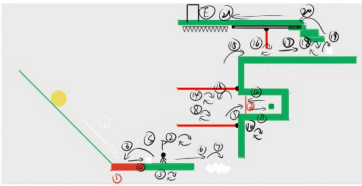
1. Player walks past bar 1
2. Player switches to colorless mode; All bars disappear
3. Player switches to colored mode; All bars reappear
4. Player lands on the right side of bar 2
5. Player jump towards the Paint.
6. Player switches to colorless mode; All bars disappear
7. Player lands next to bar 2 and takes the Paint.
8. Player jumps in the direction of the right side of bar 2
9. Player switches to colored mode; All bars reappear
10. Player lands on the right side of bar 2
11-12. Player jumps towards the cloud.
13. Cloud rises
14. Player walks off the cloud
15. Player reaches the door and clears the level

-LEGEND-

Stone	Paint	Door	Critical Path		
Player	Cloud	Level Starts	1 unit		
Bar		Level Ends	jump - 1 unit		

First Draft of Level Design

Level 5 Map



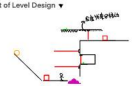
DESCRIPTION

1. The stone falls off bar 1
2. Player switches to colored mode; All bars, boxes, and lasers appear, the cloud rises
3. Player jumps onto bar 1
4. Player approaches box 1
5. Player switches to colorless mode; All bars, boxes, and lasers disappear; the cloud falls
6. Player pushes box 1 onto the cloud
7. Player jumps onto the cloud on the left side of box 1
8. Player switches to colored mode; All bars, boxes, and lasers appear, the cloud rises
9. Player jumps towards the Paint
10. Player switches to colorless mode; All bars, boxes, and lasers disappear; the cloud falls
11. Player picks up the Paint
12. Player walks towards the cloud
13. Player jumps towards the cloud
14. Player switches to colored mode; All bars, boxes, and lasers appear, the cloud rises
15. Player jumps onto the ground
16. Player switches to colorless mode; All bars, boxes, and lasers disappear; the cloud falls
17. Player walks towards box 2
18. Player switches to colored mode; All bars, boxes, and lasers appear, the cloud rises
19. Player jumps onto box 2
20. Player climbs up the slope
21. Player reaches the door and clears the level

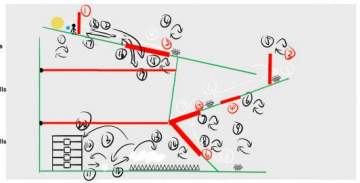
-LEGEND-

Stone	Paint	Door	Critical Path		
Player	Cloud	Stings	1 unit		
Bar	Laser	Level Starts	jump - 1 unit		
Box		Level Ends			

First Draft of Level Design



Level 6 Map



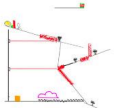
DESCRIPTION

1. Player switches to colorless mode; All bars and lasers disappear; Cloud drops
2. Player walks jumps down bar 2's slot and land on the cloud
3. Player jumps off the cloud
4. Player switches to colored mode; All bars and lasers reappear; Cloud rises
5. Player switches to colorless mode; All bars and lasers disappear; Cloud drops
6. Player switches to colored mode; All bars and lasers reappear; Cloud rises
7. Player switches to colorless mode; All bars and lasers disappear; Cloud drops
8. Player switches to colored mode; All bars and lasers reappear; Cloud rises
9. Player switches to colorless mode; All bars and lasers disappear; Cloud drops
10. Player jumps to the left of the box
11. Player approaches the box
12. Player pushes the box onto the cloud
13. Player jumps on the cloud on the right of the box
14. Player switches to colored mode; All bars and lasers reappear; Cloud rises
15. Player switches to colorless mode; All bars and lasers disappear; Cloud drops
16. Player jumps out off bar 2's slot
17. Player picks up the paint
18-19. Player jumps back to the cloud
20. Player reaches the door and clears the level

-LEGEND-

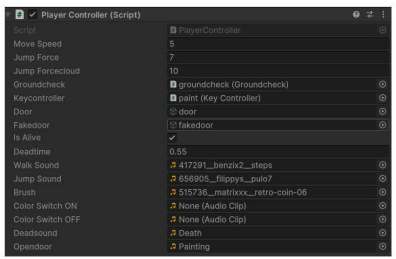
Stone	Paint	Door	Level Ends		
Player	Cloud	Stings	Critical Path		
Bar	Laser	Switch	1 unit		
Box	Lock	Level Starts	jump - 1 unit		

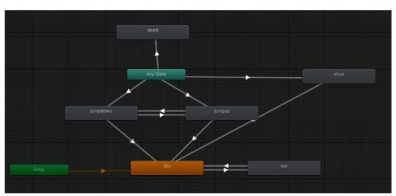
First Draft



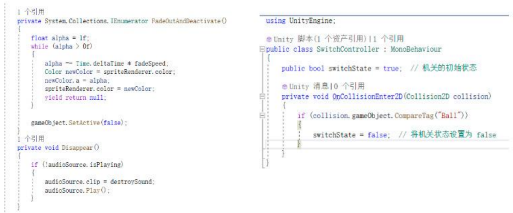
PROGRAMMING

Player Controller

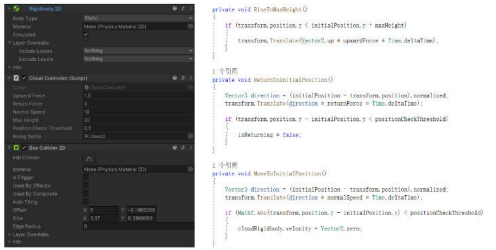




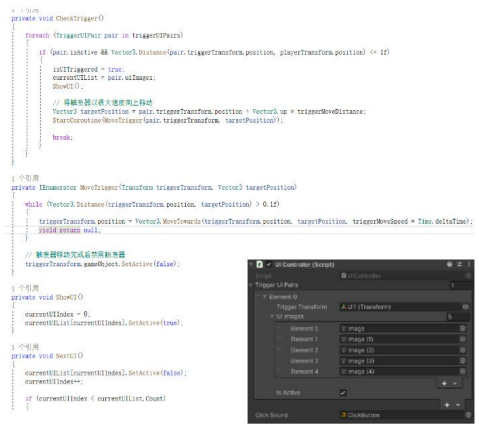
Thorn Logic



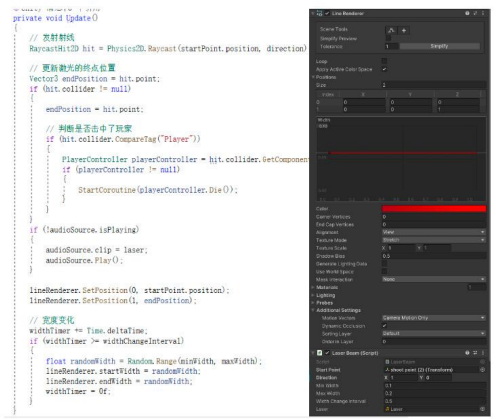
Cloud Controller



Dialogue Logic



Laser Controller



INTRO

2D Cartoon/ Platform Jumping / Funny

Single-player

Multiperson project

Personal Role : Level Design, Copywriter

INTRO

BACKGROUND

In an era of highly advanced technology, humans have become obsessed with creating strange and peculiar robots. However, only a few design concepts are able to capture people's affection, while the rest are abandoned from their inception.

The protagonist of this story is a fish-shaped robot named Fein, who is abandoned in a garbage dump with mechanical legs. Unexpectedly, it develops self-awareness, and upon awakening, it sees a dung beetle pushing a dung ball. Naturally, Fein assumes itself to be a dung beetle and harbors a dream of pushing the largest dung ball. With this dream in mind, it decides to embark on its own adventure.

TARGET AUDIENCE

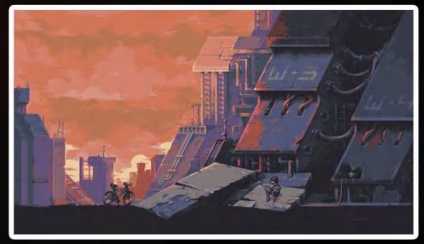
1. Funny entertainment game enthusiasts: This game adopts interesting character settings and absurd game storylines, and you will find the fun of being funny in the game.

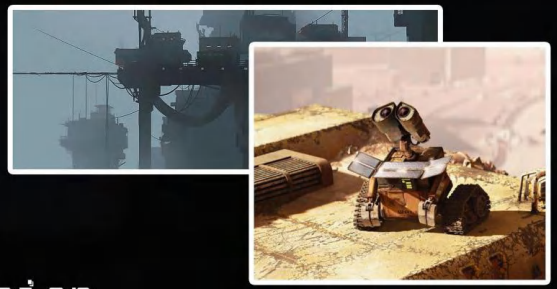
2. 2D platform game enthusiasts: In the game, we have introduced a novel core mechanism: pushing dung balls. By combining with other mechanisms, you can experience the joy of solving puzzles.

INSPIRATIONS

Artistic Expression

After multiple attempts, we have decided to use 2D cartoon characters to convey an entertaining and novel atmosphere to players. And in order to shape an entertainment society with the same background, we set the background style of the game to cyberpunk. The entire game's visuals contain a large area of cool and warm colors simultaneously, creating a strong sense of contrast.





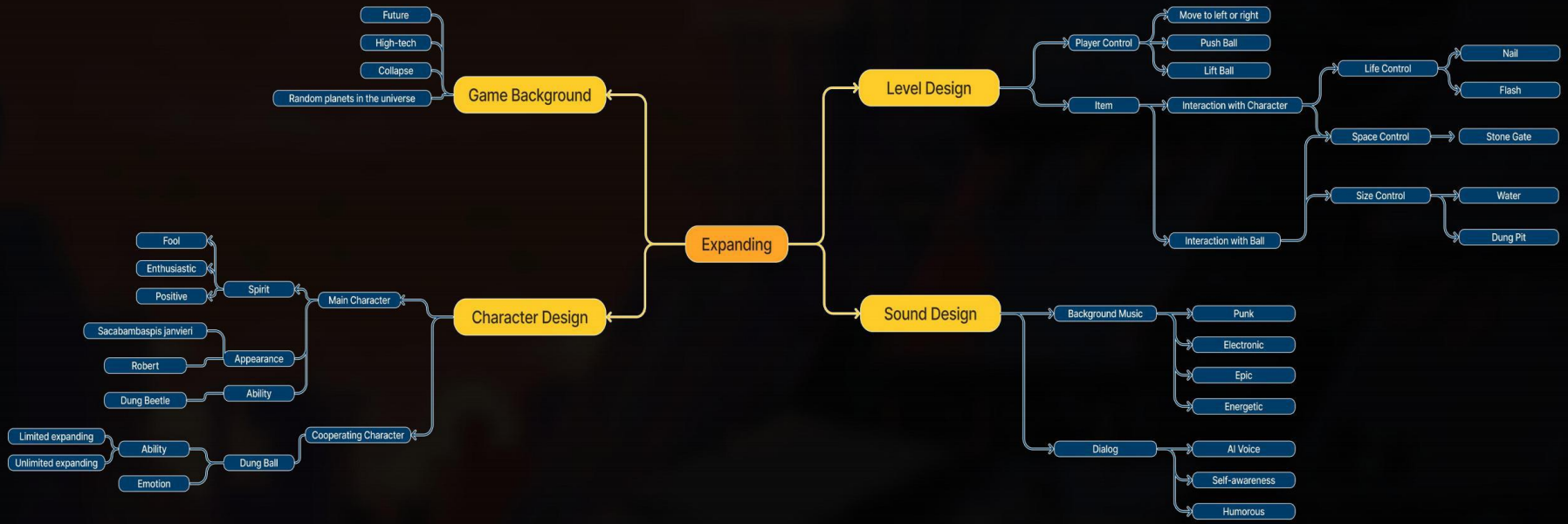
Referrance: WALL-E

Character Expression

The character's image is set as a small robot in the cyberpunk world. Living in a world where dramas are dilapidated and extravagant, it is also a hardworking person who works for meaningless things every day. But in an accidental encounter, it regained the essence of life - simple happiness. From then on, it fantasized about being a free dung beetle, and even though the world was not perfect, it could still find happiness in it.

FLOW CHART

INTRO

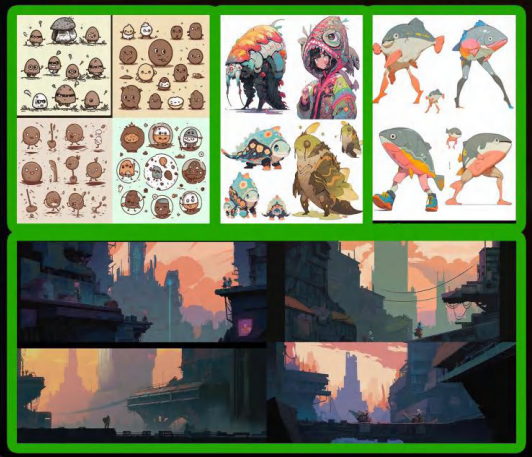


Gamejam role AI

GAME ART

midjounery

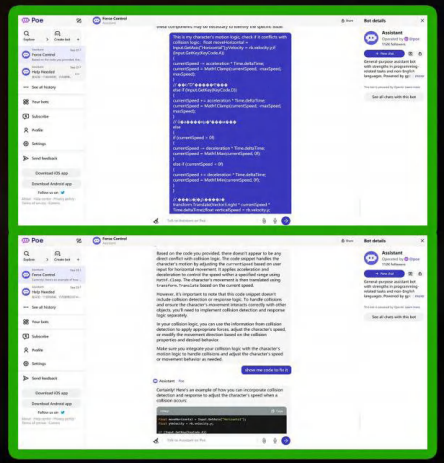
We created a large number of conceptual design drawings using AI in the early stage, and extracted some elements from the surface to be incorporated into our subsequent game background.



CODING

chatgpt3.5

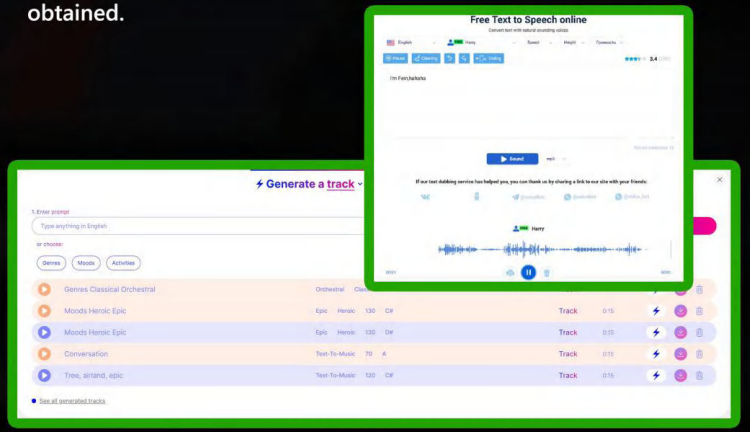
We utilized gpt-3.5-turbo to write some preliminary simple code, and in the subsequent debugging process, we also used it to provide suggestions for our program repair.



GAME SOUND DEISGN

mubert/voicebot

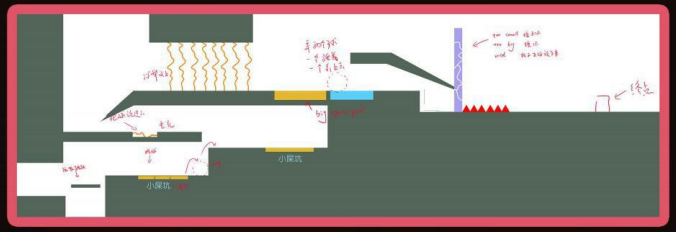
We used Mubert to create game background music, inputting emotions and music types related to the game background through text, obtaining a large number of tracks and making choices. On the other hand, we used voicebot to dub game characters. Through the early conversion of text to speech and subsequent software processing, a dialogue that helps to enrich the character's image is obtained.



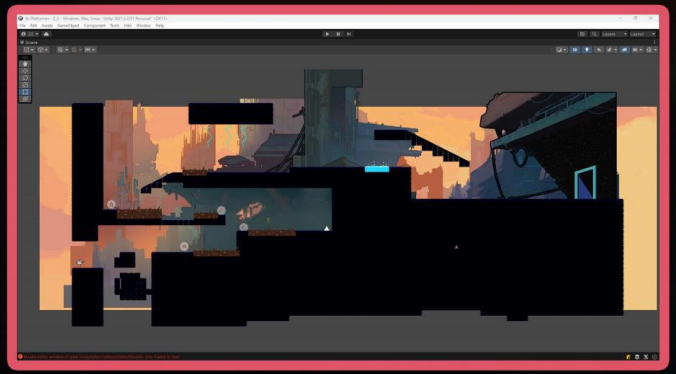
Process

BUILD SCENE

prototype

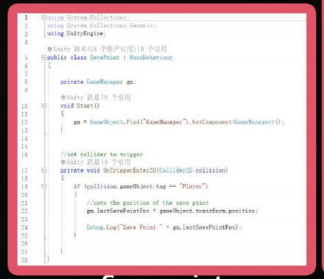


build in unity



PART OF CODE

Character movement



Save point

Hold object

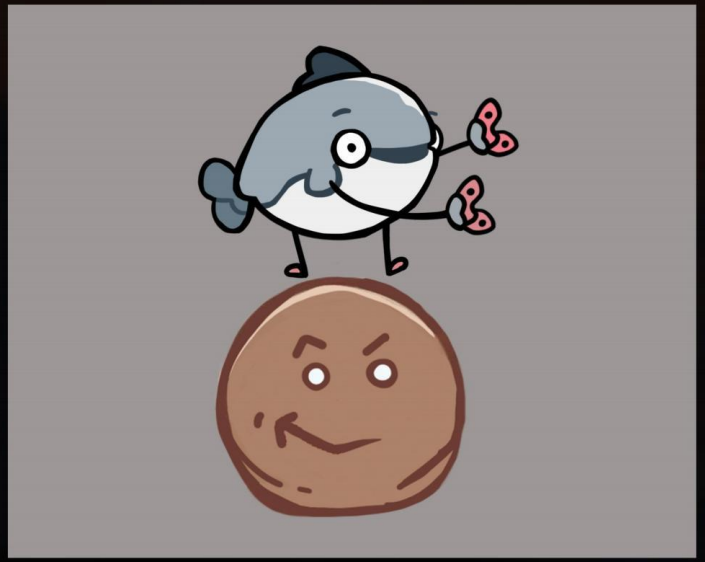
Shit

Process

CHARACTER

character name: Fein/Load

We created a large number of conceptual design drawings using AI in the early stage, and extracted some elements from the surface to be incorporated into our subsequent game background.



ANIMATION

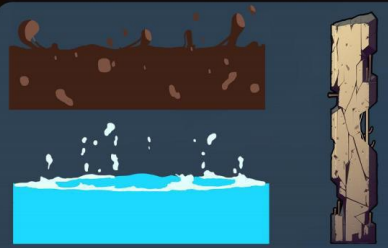
Game Art

SCENES

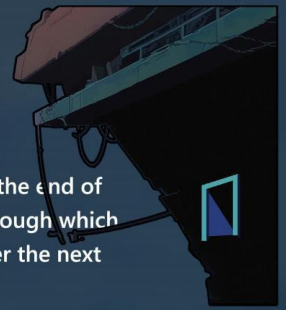
Tilemap

Final

PROPS



the goal



The door at the end of the level, through which you can enter the next level.

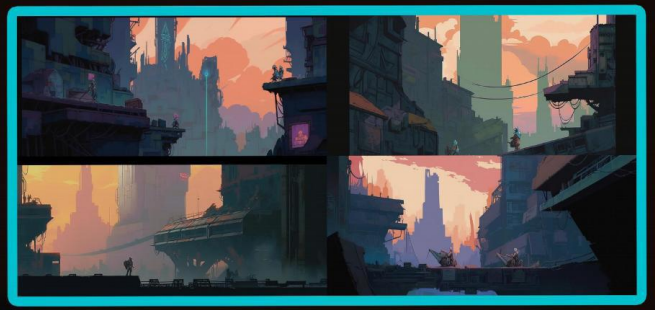
COVER

The cover consists of two main characters in the game and the game background, with a UI design that fits the story background of the abandoned cyberpunk. The entire cover design aims to convey the fun of this game.

Cartoon

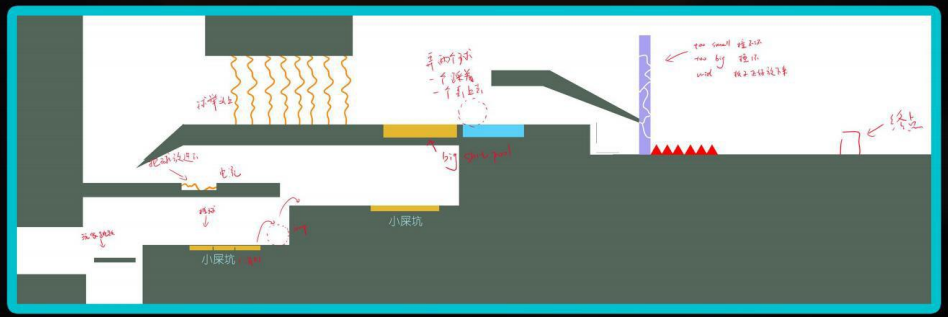
Level Design

LEVEL 1



color plate

level map

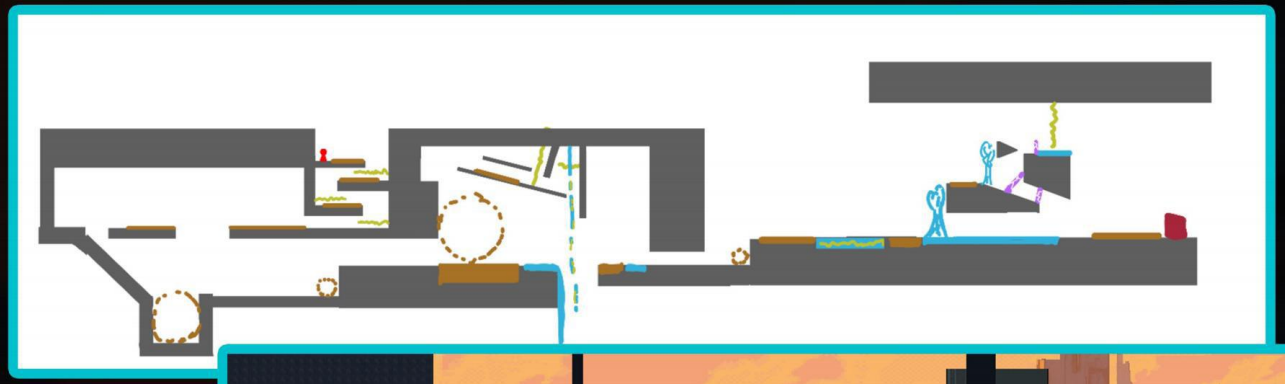


final effect

In the first level, we used the previously generated AI concept map to create a main color scheme for the game background. In terms of level design, we have introduced all the basic mechanisms related to this game in this level. The core mechanism of the game is for players to roll up the dung ball as a medium to reach areas that were previously inaccessible. On the way forward, players will encounter many obstacles such as high platforms, electric currents, and stone gates, and can reach the finish line through interaction with dung balls.At the same time, through Fein's lines in this level, players can also better understand this interesting character.

Level Design

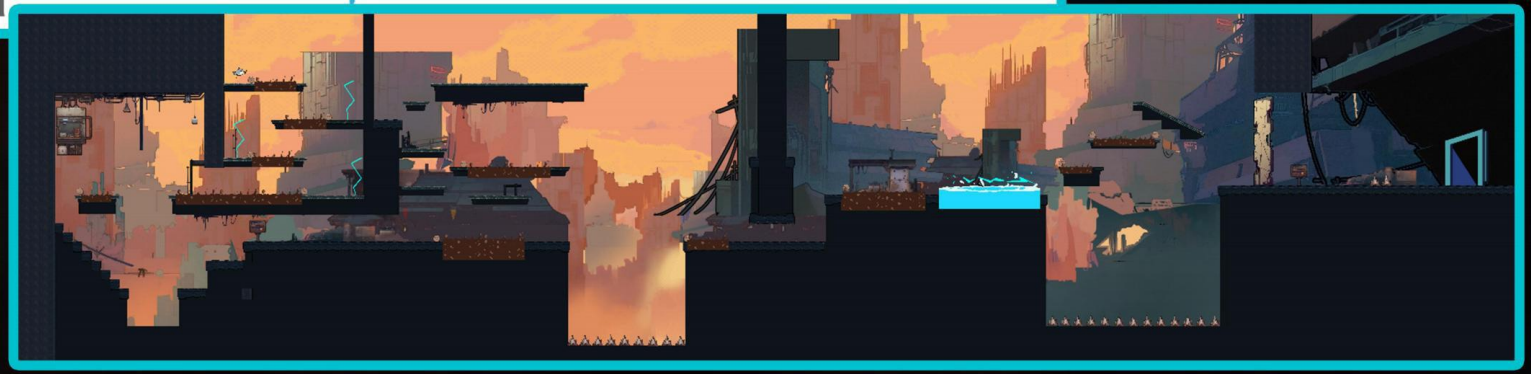
LEVEL 2



level map

In the second level, we will link each small puzzle from the previous level to create more creative puzzles. For example, in the first puzzle, players cannot help but control the dung ball to avoid being electrocuted, and also use it to complete the movement from low to high.

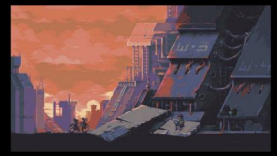
final effect



Inspirations

Artistic Expression

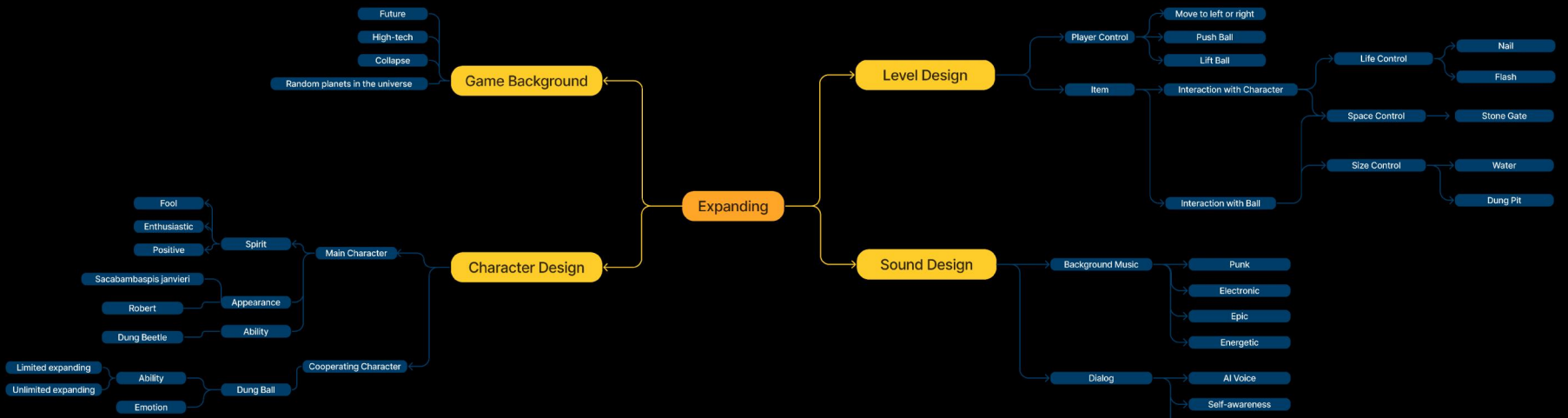
After multiple attempts, we have decided to use 2D cartoon characters to convey an entertaining and novel atmosphere to players. And in order to shape an entertainment society with the same background, we set the background style of the game to cyberpunk. The entire game's visuals contain a large area of cool and warm colors simultaneously, creating a strong sense of contrast.



Character Expression

The character's image is set as a small robot in the cyberpunk world. Living in a world where dramas are dilapidated and extravagant, it is also a hardworking person who works for meaningless things every day. But in an accidental encounter, it regained the essence of life - simple happiness. From then on, it fantasized about being a free dung beetle, and even though the world was not perfect, it could still find happiness in it.

Referrance: WALL-E




THE WAY OF HEART
VR + Mindfulness
2023.11
2023.12
Group Project
Role: Content Design
Sound Design
UE Level Art

BackGround

The population troubled by anxiety

The distances between people nowadays are ever increasing, with everyone becoming like an isolated island. Everyone is anxious, afraid of not obtaining, afraid of losing, afraid of loneliness, and afraid of being hurt. Anxiety is a normal psychological emotion, but its repeated occurrence can harm people's mental and physical health, causing them to waste time in constant internal strife.

Persona

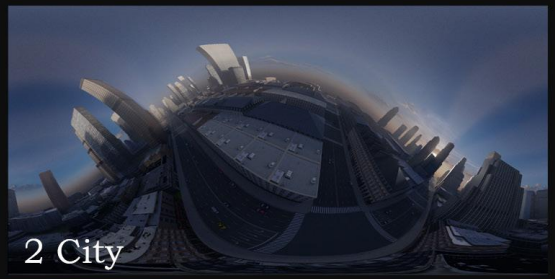
Name: Xiao Ming
Age: 26
Occupation: IT Engineer
Education: Master's
Characteristics: Precise, Logical

Personal Quote:
"To others, I may seem to be in my own world, but in reality, I'm piecing together a complex puzzle piece by piece. Being alone doesn't mean loneliness; it often means delving into the depths of a problem to seek its root. For me, every precise and accurate line of code represents a challenge conquered, a truth revealed."

Name: Xiao Hua
Age: 22
Occupation: Illustrator
Education: Bachelor's
Characteristics: Creative, Free-spirited

Personal Quote:
"My brush is like a magic wand, turning a blank canvas into a vibrant world. Every stroke is an adventure, every color a new melody. Even the simplest sketches are imbued with my passion and dreams. The world is my canvas, and I aim to fill it with the vivid hues of imagination."

"Everyone has their own way of interacting with the world. For some, it's a quiet, reflective journey. For others, it's a bold, colorful expression."



Cotent

Accompanied by audio guidance, users move step by step from the room to the outdoor space and finally to the boundless universe. And in the end, the universe collapsed into mirror space, and the player returned to the room.

User experience feedback

It can really divert attention.

Provide more feedback in form, making the product more interactive.

The VR device is too heavy and tiring to wear.

Despite having a better audio and visual experience on VR and PC devices, we still hope to achieve similar results on mobile devices through optimization.

Impressive visual effects.

In the future, more scenarios can be provided, such as deserts, rainforests, etc. Enable users to experience it repeatedly without feeling bored.

Future goals

Reference

Mindfulness Therapy

Mindfulness is the awareness that emerges through purposefully focusing one's attention on the present moment, while non-judgmentally acknowledging each experience as it unfolds. Mindfulness therapy is a method that uses mindfulness training to achieve this state of awareness, thereby alleviating stress and eliminating intense emotions.

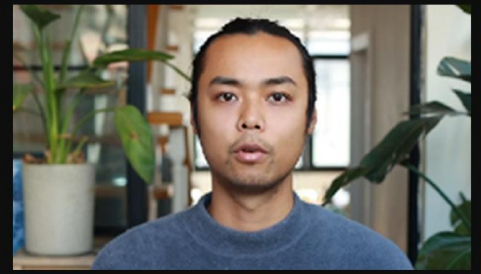
The Effectiveness and Principles of Mindfulness Therapy

"Research on the Impact of a Chinese Online Mindfulness-Based Stress Reduction Course on the Mindfulness Levels and Mood States of the General Population":
Online mindfulness stress reduction videos can stabilize viewers' mood states.

"Progress in Clinical Application Research of Mindfulness-Based Stress Reduction":
Mindfulness meditation is applied not only to patients with illnesses but also to healthy individuals, reducing stress and anxiety among the healthy population, diminishing negative emotions, and thereby improving the quality of life.

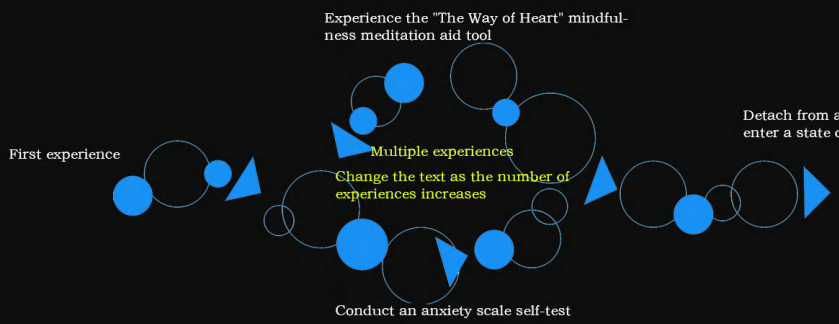
Effects of Mindfulness-Based Stress Reduction (MBSR) on Emotion Regulation in Social Anxiety Disorder:
Mindfulness meditation may alter emotional responses by modifying cognitive-emotional processes.

Reference



Product Description

User experience process (long-term)



Product Structure

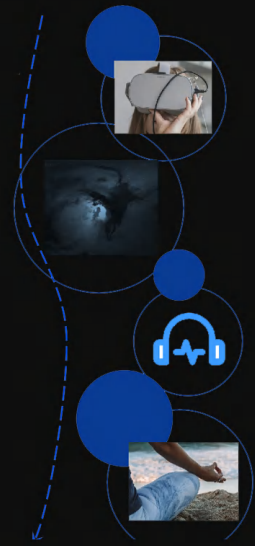
1. Introduction to Mindfulness: Mindfulness is a psychological state that emphasizes open, sustained attention, awareness, and experiencing the present moment. It emphasizes focusing on current sensations, emotions, and thoughts without judgment or getting caught up in past or future thinking.

2. Relaxing the Body: Try to follow the guided relaxation to relax your body and mind. Relax each part of your body, progressively moving down to your feet. Mentally scan each part of your body, relaxing every area along the way.

3. Body Awareness: Once you feel thoroughly relaxed, try to use mindfulness to explore each part of your body. Check in with each part, cultivating clear awareness of the exact sensations in each area.

4. Integrating Mindfulness and Awareness into Daily Life: You can also integrate this approach into all activities in your life, fully engaging in what you are doing in the present moment. Whether it's eating or walking, refrain from random thoughts or distractions. Your entire being—environment, body, and mind—are fully present in that moment. Whatever you do and whatever is within reach, fully embody your life in the present moment.

5. Focus on the Present Moment: Some people perceive immersing themselves in what they are doing as a stressful endeavor, but it's not the case. When you fully invest yourself in the task at hand, you let go of other concerns. Therefore, when doing something, that is your entire focus in the present moment, allowing you to approach it with a more relaxed attitude.



User experience process (short-term)

1. Feeling anxious and unable to concentrate, unable to study or work properly.
2. Put on a VR headset.
3. Gradually focus your attention on the video inside the VR headset and calm your mind.
4. Take off the VR headset.
5. Listen to guided mindfulness texts in your headphones to enter a meditative state.
6. Exit the meditative state.
7. Return to a relatively calm state.