Escaping Mars

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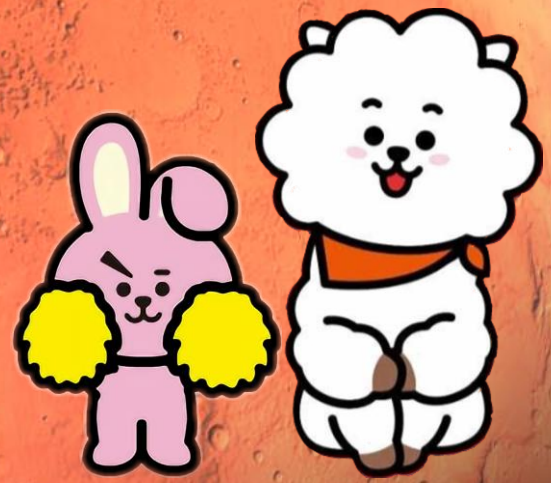
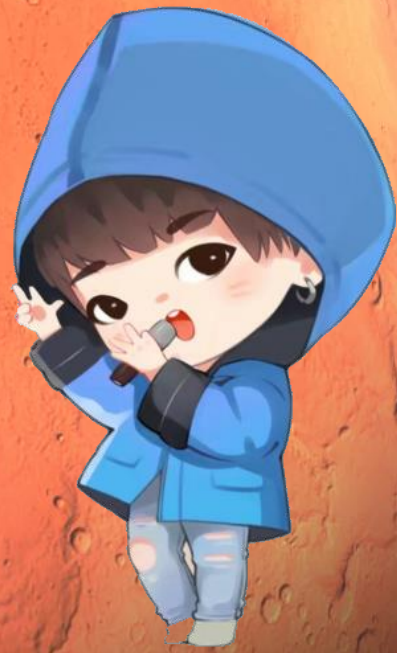
Problem description and methods

- Game for entertaining
- 電流急急棒與躲炸彈的結合
- 1. 創立人物與障礙物物件
  2. 判斷碰撞並且設定反應
  3. 美觀upup ^^



Analyze program structure

- 人物(main player Hua, BTS, NPC)
- 迷宮主體
- 音樂、圖片處理
- 判斷objects之間的碰撞與互動情形
- 前情提要與結尾



Analyze program structure (class code)

Module and basic function

```
import pygame
import random
import math
import numpy as np
import os, sys
import time
import cv2
from pygame.locals import *
from pygame.compat import geterror
```

```
def load_image(name, prev, colorkey = None):···

def load_sound(name):···
```

Analyze program structure (class code)

Player and NPC class

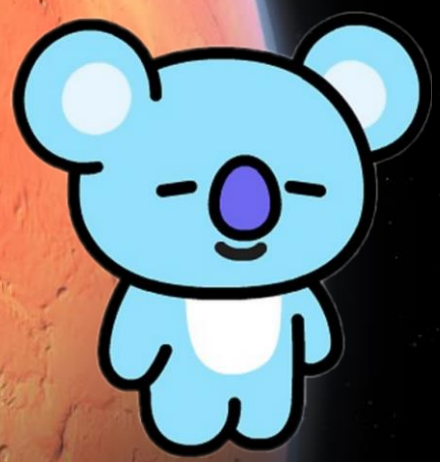
```python
#玩家
class Player(pygame.sprite.Sprite):
    '''
    隨著滑鼠移動，滑鼠要換成圖片!!!!!!
    碰到迷宮邊界則損血
    碰到NPC回血
    不會呼叫外面的參數
    只有玩家用pos，其他都用x y
    rect吃四個參數(左上角x座標，左上角y座標，長，寬)
    '''
    def __init__(self):…

    def walk(self):…

    def stepback(self):…

    def recover(self):…


    def injure(self, times, play):…
    def update(self):…
```

```python
class NPC(pygame.sprite.Sprite):
    '''
    技能都一樣，差別在於對話框不同
    遇到邊界要後退
    遇到玩家或NPC不能疊上去
    '''
    def __init__(self):…

    def Up(self):…
    def Down(self):…
    def Left(self):…
    def Right(self):…

    def stepback(self):     …

    def trash_talk(self):…
    def update(self):…
```

Analyze program structure (class code)

BTS class

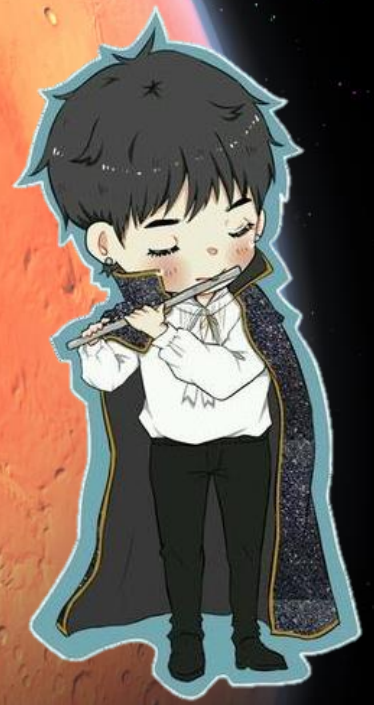
```
class BTS(pygame.sprite.Sprite):
    '''
    不用管分別的技能是甚麼，反正只要碰到就損血，另外寫碰到玩家時的行為
    設定進行速度
    把外界參數抓進來用(判斷碰撞)
    移動模式可能要改一下(不是隨機移動，不然會像撞球，從哪邊碰到障礙物也很難判斷)
    '''

    def __init__(self):…

    def stepback(self):…

    def change_dir(self):     …

    def walk(self):…

    def update(self):…
```



Analyze program structure (class code)

Maze class

```
class MazeBarrier(pygame.sprite.Sprite):

    def __init__(self, position, row, col, unit, maze, x,y): ...

class Maze(pygame.sprite.Sprite): ...

# 遊戲最最初始值設定，主程式一定是要先跑這個，阿然後還要再call NPC and BTS
class MazeGame:
    def __init__(self): ...
```



Analyze program structure (main)

Initial player and BTS

```
#--這裡是人物設定的部分----------------------------------

Hua = Game.player
#Hua.image, Hua.rect =
Hua.screen = screen
Hua.bighead = pygame.image.load("game_material/main_pic
Hua.pic_rect = pygame.Rect(670, 5, 100, 100)
```

```
RM = Game.bts1  #破壞
RM.screen = screen
RM.image, RM.rect = load_image("koya.png", "main_pic")
RM.rect[0], RM.rect[1] = 720, 280
RM.skill = "Dumb: damage"
RM.sound_flag = True
```

```
Jin = Game.bts2   #冰凍
Jin.screen = screen
Jin.image, Jin.rect = load_image("rj.png", "main_pic")
Jin.rect[0], Jin.rect[1] = 790, 300
Jin.skill = load_image("ice.png", "main_pic")
```

```
Suga = Game.bts3  #石化
Suga.screen = screen
Suga.image, Suga.rect = load_image("shooky.png", "main_pic")
Suga.rect[0], Suga.rect[1] = 790, 380
Suga.skill = load_image("stone.png", "main_pic")
```

```
J_hope = Game.bts4   #融化
J_hope.screen = screen
J_hope.image, J_hope.rect = load_image("mang.png", "main_pic")
J_hope.rect[0], J_hope.rect[1] = 750, 420
J_hope.skill = load_image("flame.png", "main_pic")
J_hope.sound_flag = True
```

Analyze program structure (main)

Initial player and BTS(cont'd)

```
Jimin = Game.bts5   #放大
Jimin.screen = screen
Jimin.image, Jimin.rect = load_image("chimmy.png", "main_pic")
Jimin.rect[0], Jimin.rect[1] = 690, 420
Jimin.skill = False
```

```
V = Game.bts6   #迷路
V.screen = screen
V.image, V.rect = load_image("tata.png", "main_pic")
V.rect[0], V.rect[1] = 640, 380
V.skill = "Dumb: shift"
V.sound_flag = True
```

```
Jungkook = Game.bts7  #嗜睡
Jungkook.screen = screen
Jungkook.image, Jungkook.rect = load_image("cooky.png", "main_pic")
Jungkook.rect[0], Jungkook.rect[1] = 650, 300
Jungkook.sound_flag = True
```

Analyze program structure (main)

Initial NPC

```
BigMac = Game.npc1
BigMac.name = BigMac.name_font.render("大麥", True,
BigMac.name_rect = pygame.Rect(1375, 110, 50, 20)
BigMac.screen = screen
BigMac.bighead = pygame.image.load("game_material/m
BigMac.pic_rect = (1335, 5, 100, 100)
BigMac.talk_frame = load_image("bigmac_talk_frame.p
BigMac.talk_frame = BigMac.talk_frame[0]
BigMac.frame_rect = pygame.Rect(925, 30, 400, 100)
```

```
#初始位置
#350 480
```

```
#設置按鍵
BigMac.up = K_UP
BigMac.down = K_DOWN
BigMac.left = K_LEFT
BigMac.right = K_RIGHT
```

```
HongYu = Game.npc2
HongYu.name = HongYu.name_font.render("宏宇", True, (
HongYu.name_rect = pygame.Rect(40, 110, 50, 20)
HongYu.screen = screen
HongYu.bighead = pygame.image.load("game_material/ma
HongYu.pic_rect = pygame.Rect(5, 5, 100, 100)
HongYu.talk_frame = load_image("hongyu_talk_frame.pn
HongYu.talk_frame = HongYu.talk_frame[0]
HongYu.frame_rect = pygame.Rect(115, 30, 400, 100)
```

```
#初始位置
#420 480
```

Analyze program structure (main)

- 接下來還有設定鍵盤控制NPC與滑鼠控制main player

- 分成三部分判斷碰撞
  1. main player Hua 撞到障礙物、BTS、NPC
  2. BTS 撞到彼此、障礙物、NPC
  3. NPC 撞到彼此、障礙物

Analyze program structure (main)

Update the display after a round

```
#貼上
Hua.update()
BTS_group.update()
NPC_group.update()
#print("Blood:"+str(Hua.blood))
#print(pygame.mouse.get_pos())
#print(Hua.last_pos)
#print(Hua.pos)
#-------------------------------------
pygame.display.update()
```

Analyze program structure (main)

- 每一次更新畫面後，判斷player是否死亡或是勝利。

```
#判斷死了沒
if Hua.dead:
    cry = load_sound("cry.wav")
    success_flag = False
    fail_flag = True
    #先關背景音樂
    main_bgm.stop()
    cry.play()
    pygame.time.wait(5000)
    break
```

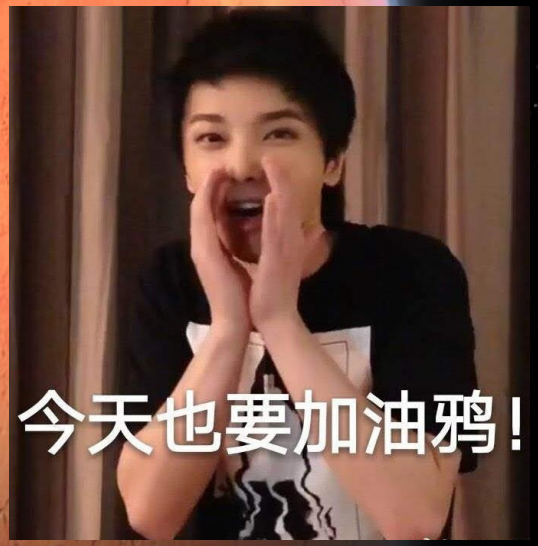
```
#判斷過關!!!!!!!!!!!!!!!!!!!!!!!!!!!
Hua.last_pos = pygame.mouse.get_pos()
"""print(Hua.last_pos)"""
Hua.rect[0], Hua.rect[1] = Hua.last_pos
"""print("finish:", Hua.rect)"""
if Hua.rect[0] > Hua.finish[0] and Hua.rect[1] > Hua.finish[1]:
    applause = load_sound("applause.wav")
    success_flag = True
    fail_flag = False
    #先關背景音樂
    main_bgm.stop()
    applause.play()
    pygame.time.wait(5000)
    break
```

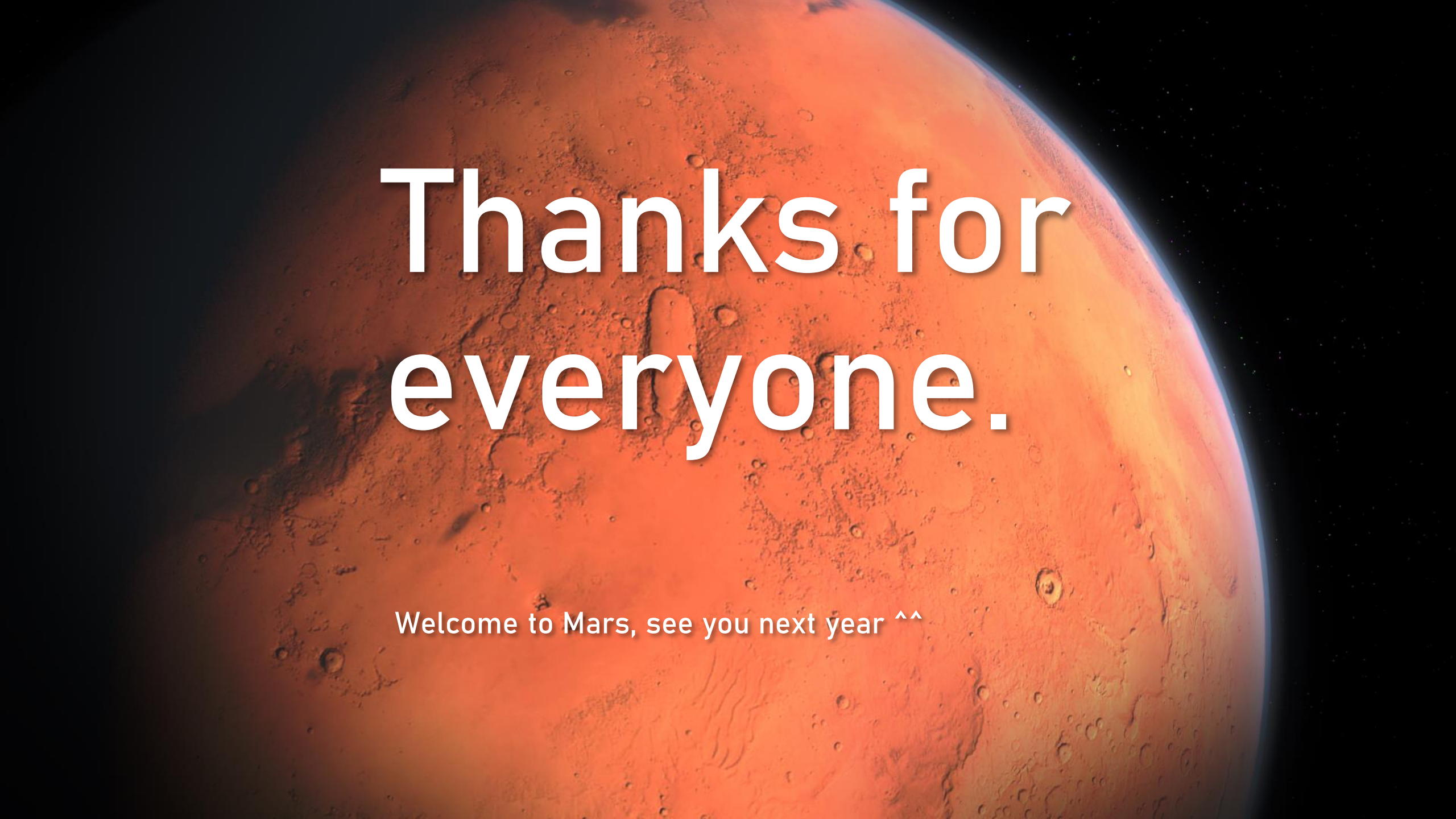
Conclusion

- 為了寫遊戲，利用pygame這個module去建造遊戲環境
- 我們設計的遊戲“Escaping Mars”，其實不太需要演算法，但是需要很多判斷去偵測此刻場上人物的狀態與位置
- Load image也是一大學問，我們想辦法把圖片resize以符合需求

Contributions, prospects, and application

- 其實這本來就是個遊戲，屬於娛樂性質，我們的貢獻就是帶給大家歡樂吧！(笑
- 希望大家可以玩玩這個遊戲，再面對final boss，會覺得不孤單。還是有很多人在與你一起努力著，大家都不孤單.....
- 最後壓.....大家期末加油，fighting！




Thanks for everyone.
Welcome to Mars, see you next year ^^