POP MATRIX 2018

31080
INTERACTIVE MEDIA
ASSIGNMENT 1

— THE —
PROJECT PROPOSAL

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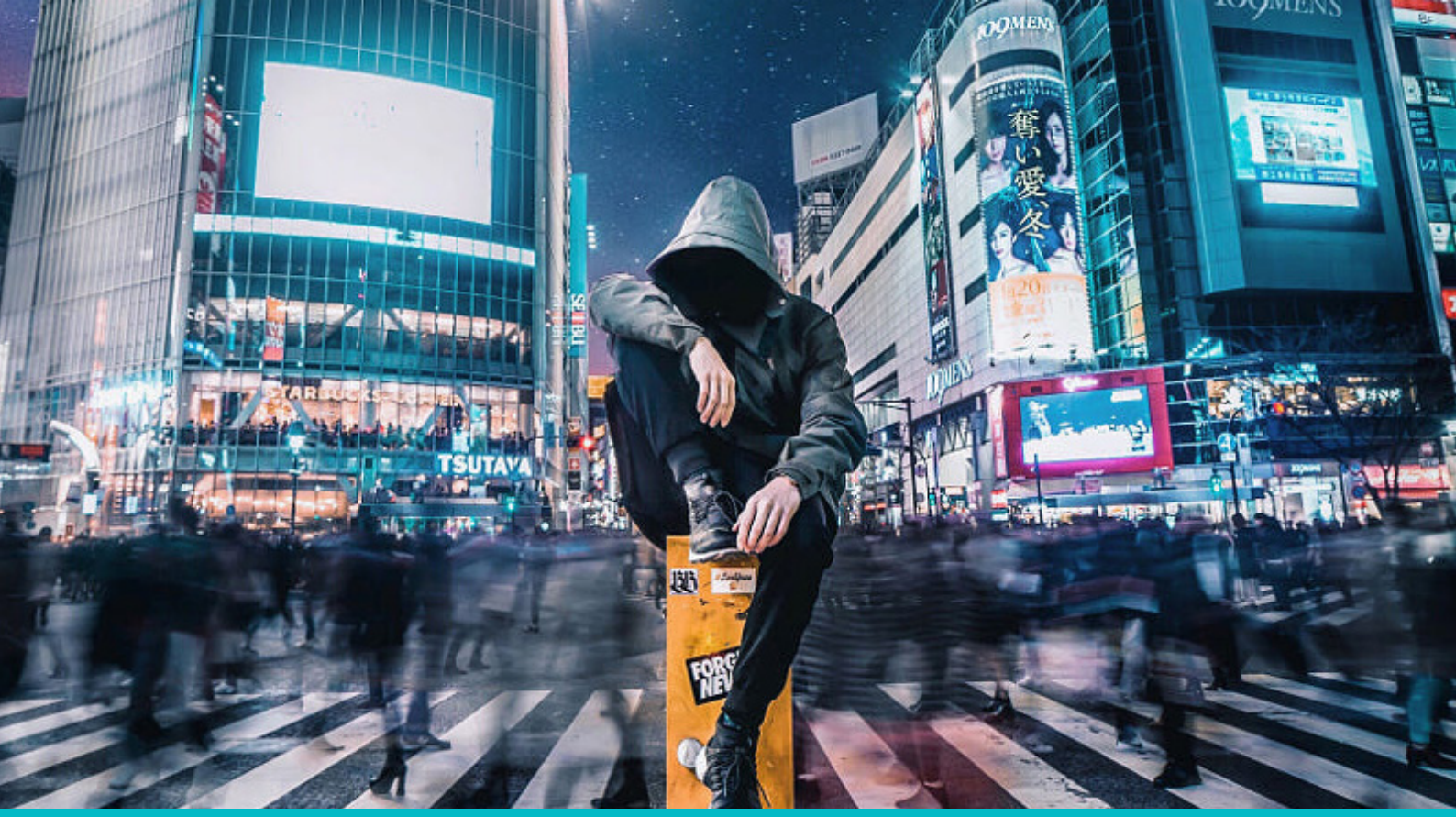


Executive Summary

This proposal acts as a report providing an overview of development, planning and features of an interactive fiction which is designed to entertain anyone who is interested need of a short distraction or break from the tasks of daily life. Taking into consideration the current trends and successes of AR technology and transmedia game as well as researching an appropriate medium to create the game in, a plan was developed on how to best structure and plot the game's elements and plot. The results of such research and considerations made have been recorded below, providing a definitive plan and proposal for the creation of this AR game.

This report reveals that the project will focus on interesting interactions and immersive experience. The goal of the game is to provide a relaxing break for players to undergo when under the stress of work and daily life, and also a funny but meaningful game experience. Accessibility is important to attract players and thus the decision to have players make use of everyday items to progress was made. This play style will also help immerse players in the game, providing the merging of reality and fantasy that attracts AR game players. Weaknesses have been found in the consequence of making the game brief: a lack of traction to the game due to limits in story and world of the game. However, as this game is meant to be played over a short time and not often, it does not detract from the aim of the game itself.

Understanding that there are limitations in the findings of the report, there are possible limitations and yet to be discovered flaws in the planning of the game which may not be found until development of the game proceeds. Thus, the report will only express that which is predictable within planning and allows that changes may be made.

Concept

Idea Introduction

The project aims to design an interactive fiction by utilising Processing and Webcam to stimulate a real story situation which could interact with users. This interactive fiction will provide an interesting adventure, based on the established storyline and abundant interactions as well as perceptually enriched experiences between the real environment and digital world. The interaction will be achieved by the webcam (hardware) to capture the images of user's face or cards, which is supported by NFT (Natural Feature Tracking) and AR (Augmented Reality) technologies.

The goal of this project is to offer an interesting and immersive experience to the user through various interactive activities. These interactive activities include biometric identification, ID cards identification and movement identification. Users will develop the storyline by completing the corresponding interaction activities, while the narratives of story will also lead users to actively participate in the interaction.

Motivation

The idea of this project is derived from Transmedia Storytelling and Alternate Reality Game, which could enhance the interaction between users and the digital world. As the development of Augmented Reality, an increasing number of games promote and practice this technology into interaction design, aiming at establishing a natural environment with the integration of immersive sensations, such as PokemonGo. Meanwhile, the interactive fiction, for instance Replica and Timeline, stimulates environment in which users could use text controls to make various choices, so that they are able to develop their own storylines and determine the ending. These technologies help designer to create more immersive and attractive scenarios that break the constraints between the real world and game.

This project intends to delineate an interactive story by combining the elements of abovementioned technologies, leading users to put themselves into the character, to actively interact with the system, and to experience an interesting adventure.

Besides the interactions, the whole story contains practical significance. Young people in modern life spend much time using internet and mobile applications, and are likely to ignore the value of the reality. The storyline suggests the user to escape from the digital world and focus more on the real life because the virtuality cannot replace the reality.

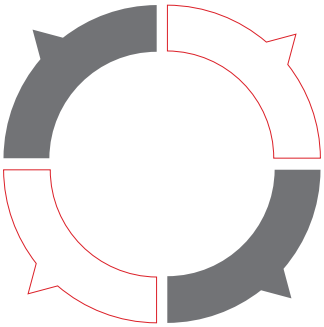
Special Points and Technologies

Face Detection (OpenCV)

Face detection is a common used technology that identifies the human face and its movement in a visual scene and digital images (xxx). In this project, face detection will mainly be used to identify the position of face and capture the user's face image. Moreover, by tracking the movement of users' face, the perspective of the onscreen images could be adjusted accordingly.

NFT (NyARToolkit)

Feature detection will mainly be practiced in the project to capture the image feature of UTS students ID cards and Opal Cards, as well as the location and viewpoints. It is essential to input a given type of image information in advance for the purpose of comparison.



Armarker (NyARToolkit)

Viewpoint tracking and virtual object interaction are the main function of Armarker (Reference), which can capture the position and viewpoint of a particular image on the cards. Then, a 3D graph will be drawn and overlaid on that image, so the feature of the onscreen card would be augmented. By using AR cards, the visual and physical interaction in this project would be more active, attractive and funny.

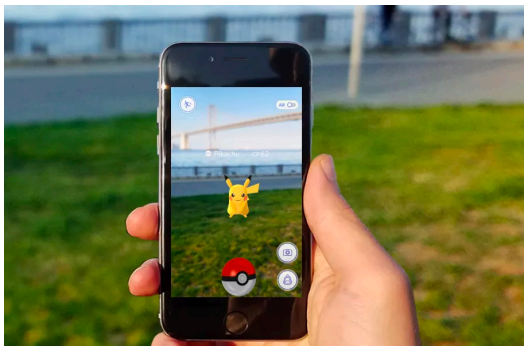
Storyline and Universality

The story contains several sections that are progressive layers, with the frame of chatting between users and other characters. The interactive activities will be inserted in the story flow as a transition. Once an interaction task has been completed successfully by the user, the storyline will be developed further. Additionally, It requires users to use common objects, including Student ID card and Opal card, to interact with system, which is easy and convenient for users and also enhance the sensations of reality.

Case Study

Augmented Reality (AR) is an increasingly popular interactive multimedia platform, seeing an increase in application across various industries - such as construction, engineering, everyday life applications, retails, and especially gaming. AR games have seen a rise in recent years, the most outstanding of which being Pokemon GO which achieved astounding popularity worldwide.

Pokemon GO is notably one of the most successful AR games to have existed, gaining almost 45 million users within a month of its release in July 2016. Though this can be attributed to its per-existing fan base due to its great series of games, animation, trading cards, etc. Starting from 1996, it is without a doubt that Pokemon GO had taken over the world with its cleverly designed, convincing fusion of virtual world with the physical environment of reality. Though media has always been a gateway from the real world to fantasy, Pokemon GO had successfully merged the two, giving players entertainment by using AR to bring fantasy to the real world.



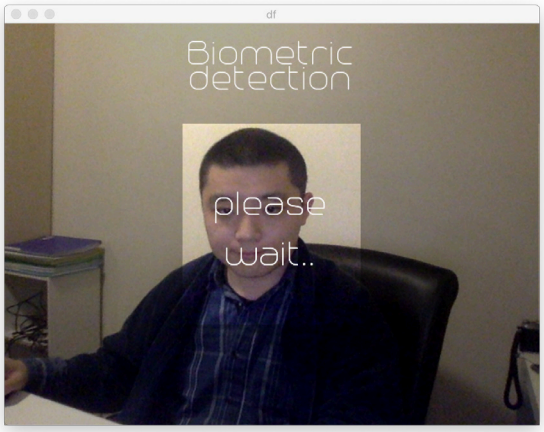
Pokemon Go AR Screen

The core value of the Pokemon Go and its AR experience inspired and heavily influenced our project. Thus, the project would like to design an interactive fiction that hopes to serve the same purpose: a brief reprieve from the real world through an interactive game within reality itself.

Design Outline

1 Welcome Screen

2 Biometric Identification (Face Detection - OpenCV)



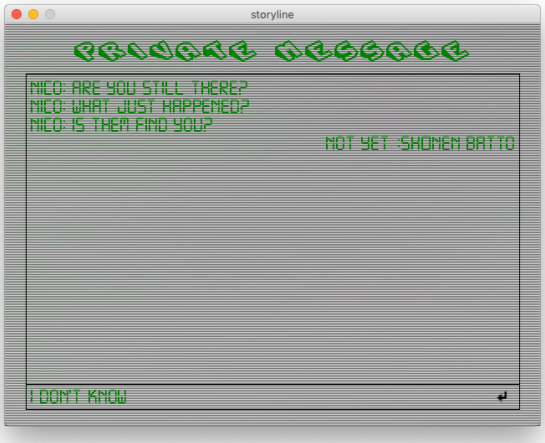
Storyline

System requires biometric identification to check whether the user is a human.

Interaction

The user will face to the camera, and the webcam detect the user's face, capture the face image. If success, then save the image of face.

3 Chatting Screen



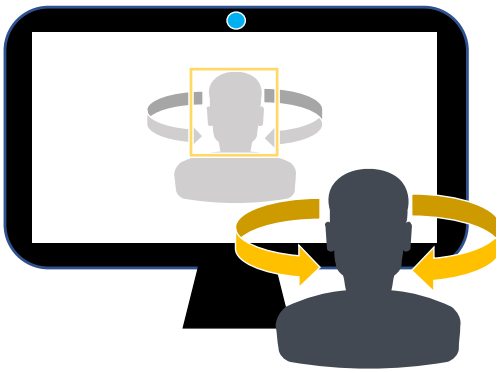
Design Note

- Background music
- Beep while typing
- Old style chatting window design
- Typing animations

Storyline

The user would be informed that he has been selected to be a saviour to rescue the people in another world, however, he has been stuck in the digital world. He is chatting with another character, who would assist the user to escape from the digital world and lead him to the destination. The user need to invade in the system, delete his information and then go out of the world. Otherwise, he will be caught by guards.

4 Movement Detection (Face Detection - OpenCV)



Design Note

- Black background, display a video as a transition
- Unforced interaction

Storyline

This is an transition page and will turn to the login page.

Interaction

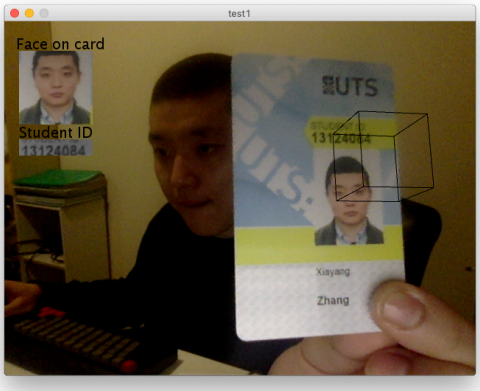
Camera will capture the position and movement of users' face. If user's face moves slightly, the angle of the viewpoint will be changed correspondingly.

5 Chatting Screen

Storyline

This is the login page, and screen shows "Welcome to UTS Information Center". The user would be told that he needs to invade in the system, find and delete his personal information, which is the preparation for escaping.

6 ID card Identification (NTF – NyARToolkit)



Design Note

- 3D graph overlaid ID image
- ID information shown on the top left.

Storyline

In order to invade the system, the first step is to pass the ID check.

Interaction

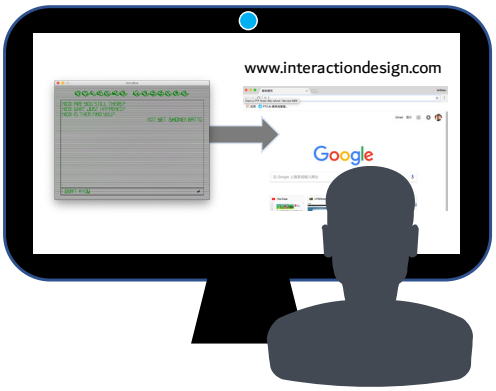
User will put the UTS students ID card face to the camera, and then the system will capture the ID card information and shows the image saved before with the ID card information.

7 Warning Screen

Storyline

Once the user conduct ID card identification, after confirmation, there is a warning message “Invalid invasion!” shown on the screen.

8 Transmedia Interaction



Design Note

- Established Websites and ID card
- Input new ID information in the system
- Web link will be highlighted

Storyline

The user has been told that his ID does not contain the authority of entrance. The user needs to visit other website to download the ID with higher level of authority.

Interaction

In this step, users must go to the website, which has been established, to obtain another ID card. This is a transmedia interaction that allows users go back the real world and take actions, and then respond to the digital world.

9 ID card Identification (NTF – NyARToolkit)

Interaction

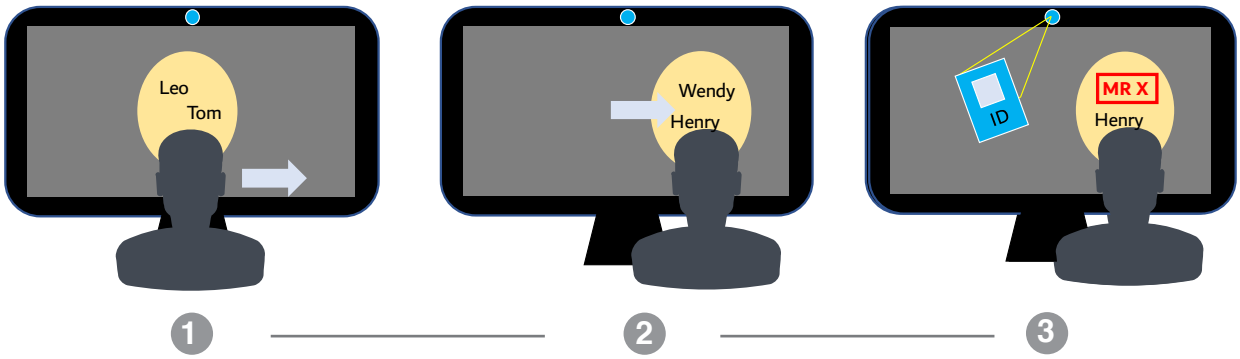
Once users get the ID card from the given website, he will be instructed to open the ID card via his smart phone. The user is instructed to open the ID card Image on the phone, put the image face to the camera to conduct examination. Same as the step 6.

10 Chatting Screen

Storyline

After checking, the user will be told that he has entered the system successfully, and he needs to find his personal information files with the correct name.

11 Face Movement Detection + ID card Identification



Design Note

- The backgroun is dark with lots of names on it
- Face position will be lighted, the user changed light position by moving head
- ID card identification is used for name selection

Interaction

The system will detect the user's face and only the face position is light. Users can change the light position by moving his head to discover his name. Once he finds the name, keep the head position over 3 seconds, and put the ID card on the camera to confirm his selection.

AR card will be used in this interaction, which augmented and expanded the real object in the digital world. ID card will be detected automatically by the camera, and the 3D graphs will appear and cover the card pattern

12 Warning Screen

Storyline

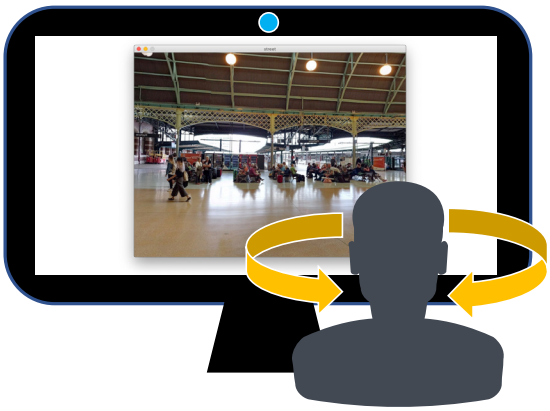
If the user finds the correct name and file, the screen will show a message **'Deleting documents, 100%'.**

Interaction

After deleting documents, the background turn to black.

Audio play: " Congratulations, you have nothing left on this world, take care! "

13 Face Movement Detection



Storyline

The user will be informed that he has completed his work and it is the time to go. The only way to the destination is by train, so the user needs to scan the Opal card to get on the train.

Interaction

The screen will display a panoramic image (360 degree) of train station. The camera will detect user's face position and track its movement. The user can move his head to change the viewpoints to see the whole picture of train station.

14 Opal Card Detection

Storyline

The user will be instructed to scan his Opal Card to get on the train. If the identification of Opal card is successful, then the user will be informed that he will be sent to the real world to emancipate himself, because he has been stayed in the online world too long.

Interaction

The user needs to put opal card on the camera, and webcam detect the opal card information. Same as step 6 and 9.

15 Ending

Storyline

The screen will be black for 5 seconds, then the new websites will jump and show the below words:

"You are the only saviour for yourself

To live and be alive

Virtuality never replace reality"

Then the system will be closed automacally.

16 Bonus / Additional Interaction

Interaction

A poster will be putted on the UTS library with a special code on it. The user need to visit the UTS library, take a photo and scan the code during the interaction #4. Then he will be led to a different ending.

Additional Design Notes

Note 1: Background music will be added.

Note 2: A sample ID cards and Opal card information should be scanned and inputted in the system in advance for the purpose of comparison.

Note 3: Visibility and Consistency: The chatting screen design will be clear and beautiful, and also looks similar as the common chatting screen on other applications. The font size and type will be design as consistency.

Note 4: All images and chatting contexts are illustrated as example, which would be modified and improved during the implementation of the project.

Users Scenarios

The target audiences of this project is individuals, espcially UTS students, who are interested in a game that is brief and easily accessible to players as a break in-between the tasks and responsibilities of real life.

Consequently, this interactive fiction itself is short and would only require usually on-hand items and 5 minutes in real life to interact with the game.

With the increasingly technology-dependent society of modern times, the individuals that live in such a society are required to be as fast-paced as their digital partners. Thus, many people are forced to sacrifice their hobbies and free time in order to catch up and keep up. The project is created as an offering to briefly give time for such individuals to take a break, relax a bit and enjoy to relieve stress and anxiety from work and school. In order to do so, it is necessary to capture their attention and focus it on something else during the game. After the game, we hope that this project have allowed players a refresh so that they can have a more relaxed but also stronger focus on the tasks of their daily life.

Issues that arise is that the story of the game itself is limited as we wish to not prolong the players' attention, nor is our story so captivating in case players end up enthralled and lose focus on their work instead.

Next Steps

Story Design		
1	Characters Design	Design the background, name and mission of characters
2	Chatting Context	Design the storyline, finalise the whole chat scripts
Coding - Processing		
1	Welcome Page	Act 1 in Design Outline
2	Biometric Identification	Act 2 in Design Outline
3	Chat Interface	All chatting screen design
4	Face Detection	Act 4 in Design Outline - Transition Design
5	NTF & Armarker Module	Act 6 & 9 in Design Outline - ID card Identification
6	Popup Banner	All internal popup banner design - eg. Warning page, Loading page and etc.
7	Face Detection & NTF	Act 11 in Design Outline
8	360 Degree Panoramic Image Viewer	Act 13 in Design Outline
9	UTS ID Card & Opal Card	Generate & input card files
10	Websites design	Establish Website for Act 8 and Ending
Visual, Music & Vedio Design		
1	Backgroud music	
2	Beep Sound	
3	Transition Vedio	
4	TTS Audio	
5	Interface Design	Patterns, Font type & size and other interface design
Testing		
1	Internal Testing	Test by group member, record the result
2	Invited Testing	Inviting friend to test project, record the experience and feedback
Development		
1	Issues identification & Modification	Raise problems and bugs, then fix them
2	Optimization & Improvement	Improve the project base on the feedback from invited testers

Reference List

Technologies

Armarker

Nyatla 2016,viewed 23 Aug 2018,<http://nyatla.jp/nyartoolkit/wp/>

AR (Augmented Reality)

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Transmedia Storytelling

Herry Jenkins 2011,viewed 24 Aug 2018,<http://henryjenkins.org/2011/08/defining_transmedia_further_re.html>