

Design Document for:

Sentient Artificiality

Kosmas Giannoutakis – writer/designer/programmer/composer – giannk@rpi.edu

All work Copyright ©KosmasGiannoutakis

Table of Contents

SENTIENT ARTIFICIALITY	1
GAME OVERVIEW	6
COMMON QUESTIONS	6
<i>What is the game?</i>	6
<i>Where does the game take place?</i>	6
<i>What do the players do?</i>	6
<i>How many characters are involved?</i>	6
<i>What is the main focus?</i>	6
DESIGN HISTORY	7
VERSION 0.10	7
VERSION 0.20	7
VERSION 0.30	7
VERSION 0.40	7
VERSION 0.50	7
FEATURE SET	8
GENERAL FEATURES	8
GAMEPLAY	8
THE GAME WORLD	9
OVERVIEW	9
WORLD FEATURE #1	9
WORLD FEATURE #2	9
RENDERING SYSTEM	9
<i>Overview</i>	9
CAMERA	9
<i>Overview</i>	9
<i>Camera Detail #1</i>	9
GAME ENGINE	9
<i>Overview</i>	9
<i>Game Engine Detail #1</i>	9
<i>Collision Detection</i>	10
LIGHTING MODELS	10
<i>Overview</i>	10
THE WORLD LAYOUT	11
OVERVIEW	11
GAME CHARACTERS	12
OVERVIEW	12
CREATING A CHARACTER	12
USER INTERFACE	13
OVERVIEW	13
USER INTERFACE KEYBOARD	13
USER INTERFACE MOUSE	13
MUSICAL SCORES AND SOUND EFFECTS	14
OVERVIEW	14
RED BOOK AUDIO	14
3D SOUND	14

SOUND DESIGN	14
SINGLE-PLAYER GAME	15
OVERVIEW	15
STORY	15
TIME OF GAMEPLAY	15
VICTORY CONDITIONS	15

Sentient Artificiality



The game puts the player into the first-person perspective of a newly hired, cognitive science researcher-scientist at a private research institute which experimentally develops AI-based humanoids with a primitive form of consciousness. The job of the player is to conduct simple experiments on the p-zombies (philosophical zombies) in order to assess their sentience. The game is made with the Unity game engine, using also Open-source software for the sound creation.

All work Copyright ©KosmasGiannoutakis – writer/designer/programmer/composer –
giannk@rpi.edu

Philosophy

Why create this game

The motivation behind this game is twofold. The first point of departure is that computer games can function reasonable well as thought experiments (Schulzke 2013). The philosophical zombie argument is a thought experiment in the philosophy of mind (Kirk 1974), and is used in support of mind-body dualism against forms of physicalism such as materialism. A virtual world populated by p-zombies would give the opportunity to the player to explore the details, ramifications and consequences of the argument and be informed about the current debates on the philosophy of mind.

The second motivation behind this game is the exploration of the concept of control of virtual agents. This game makes an attempt to implement non-linear responses from virtual characters that are meaningful, rewarding and enjoyable in the context of a futuristic world populated by a sentient humanoids. A unique design technique that delivers this experience, is the switch between first and second-person perspective.

Immediate and Long Term Projected SocioCultural Project Impact

The objectives of this project can be summarized as following:

- Confirm that philosophical thought experiments can be viable inspirations for computer games.
- Challenge the presumption that linear-control of virtual characters is the only path to an immersive gaming experience.
- Explore and elaborate the second-person perspective game mechanic so that other developers may be intrigued and invest on it.

If the project turns to be successful, we may see more games adopting a more experimental stance, by being based on more intellectual discourses, questioning game design ideas that are taken for granted and develop new imaginative game mechanics.

Predecessor or previous games/ distinctive factors in this genre

The game draws inspiration from the following games:

- Half-life (player as a scientist)
- Lab of the Dead (gameplay consists of doing experiments on zombies) – [link](#)
- Trover Saves the Universe (second-person perspective gameplay)

The uniqueness of this game is that it combines all those elements in a coherent and meaningful setting. A VR version of this game could potentially explore novel game design and mechanics that are unique to the VR medium.

Target Audience

The game contains action-adventure/FPS/survival/ elements so it would be interesting for gamers that are accustomed with those genres. Also it can be relevant to the academic communities in the fields of philosophy of mind, cognitive science, game studies, computer science – AI.

Since the game will deal with ethical questions of violence it would be suitable for the ages 16+.

Game Overview

Common Questions

What is the game?

The game is about a possible scenario where humans will have to interact with artificial humanoids which exhibit a primitive form of consciousness. By applying first and second-person perspectives in the in-game world, and in combination with music and sound design, the game delivers an unsettling and uncanny feeling associated with this situation. This is the case because when humanity will reach the level, it will have to redefine the boundaries the defines the human condition and enter the realm of post-humanism.

For future development of the game, the player will realize that the experiments he/she/they has to conduct are of questionable ethical nature but he/she/they also realizes that this may be the only valid way to figure out the precise level of sentience of the p-zombies. As things start to go wrong, the player will have to make difficult decisions by forcing the p-zombies to make unethical actions or respect their primitive form of consciousness and create friendly relationships with them.

Where does the game take place?

The game takes place in a lab room at the PZoid research facilities in the near future. PZoid is a private research institute that research humanoids with advanced intelligent in the brink of achieving artificial consciousness. One of the main goals of the institute is to investigate the onset of the technological singularity and possible ways to contained it.

What do the players do?

The player can move around and take the movement control over the humanoid by accessing the computers in the room. For future development of the game, the player will be able to interact with objects in the environment and start conversations with the humanoids.

How many characters are involved?

The game involves the player who is a researcher-scientist and the humanoid. Additional humanoids and colleagues of the researcher-player will be added in future versions of the game.

What is the main focus?

The main focus of the game is to give a bizarre and disturbing experience by using the change of perspective in combination with the music and sound.

Design History

Being a solitary project, there was not a formal methodology that documented the design history of this project.

Version 0.10

Conceptualizing the research room-lab where the action will take place (pure visuals).



Version 0.20

Implementation of the room with the Unity game engine. Finding and importing free assets from the unity asset store. Building the static elements of the room.

Version 0.30

Implementation of the humanoid animation and first person perspective. Composition of music/sound with the Pure Data programming environment.

Version 0.40

Implementation of the first to second person perspective change and vice versa with the assistance of Hongyang Lin. Inserting and integrating the composed sounds into the game.

Version 0.50

Implementation of the introduction screen that set up the, and explain the gameplay and key controls.

Feature Set

General Features

First and second person perspective
3D graphics
Spatialized sound
Small room

Gameplay

Player can move his invisible body with the “wasd” keys and change the head looking direction with the mouse. By acceding the computers in the room, the player changes to the second-person perspective and the “wasd” key controls are passed to the movement control of the humanoid while the first person is stationary with the mouse still controlling the head looking direction. The player can exit the second-person perspective any time.

The Game World

Overview

The game world is very tiny in this version of the game, it contains just one room. Future development of the game will include the research facility with multiple rooms, offices and laboratories.

World Feature #1

Controllable humanoid

World Feature #2

Immobile furniture (desks, plants, lights, bookshelf, laptop, computer desk)

Rendering System

Overview

The game is using the Unity's built-in 3D renderer.

Camera

Overview

The camera is a very important element of the game because it defines the perspective from which the player experiences the game.

Camera Detail #1

The camera is stick on the top of the first person character and its direction can be changed by the mouse. What defines the second-person perspective is that the movement controls are passed to another character while the camera stays in the first-person character.

Game Engine

Overview

The game was built with the Unity game engine version 2020.1.13f1.

Game Engine Detail #1

The game engine keep track of the first and second-person perspective, assigning the keyboard controls to the player and to the humanoid accordingly.

Collision Detection

The Unity game engine handles collision detection really well. It uses the built-in Capsule Collider components for all the objects in the room.

Lighting Models

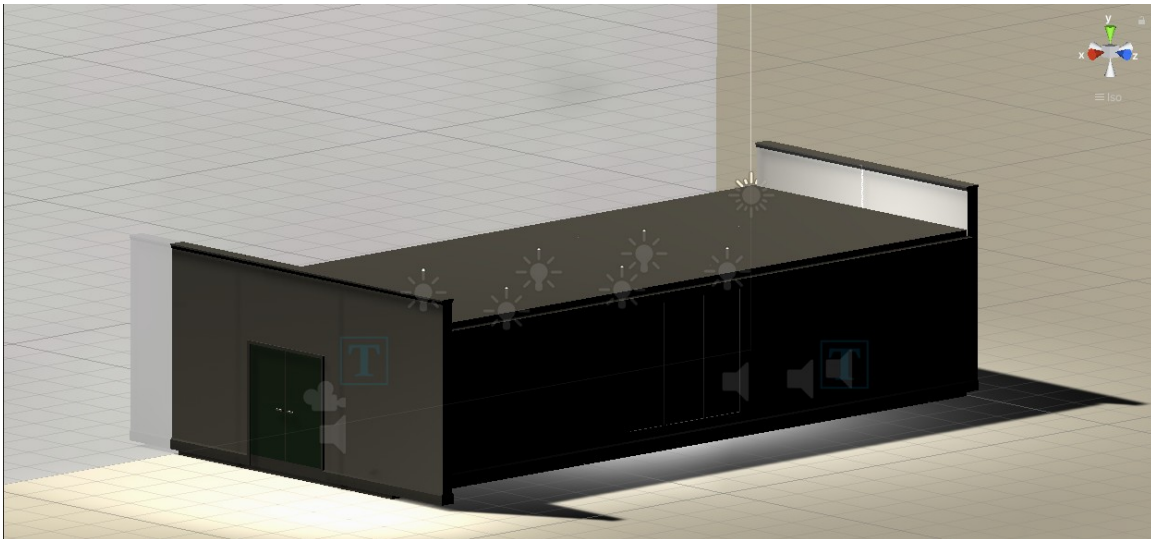
Overview

Default lighting rendering of the Unity game-engine was used. Six point lights placed on the ceiling were used to lit the room.

The World Layout

Overview

The world contains currently only one room which was build with prefabs from the free asset library: Snaps Prototype | Office, (version 1.3).



The radio device in the room was taken from the free asset Old Radio "Ocean" (version 1.0).

Game Characters

Overview

The game has currently only one character, the humanoid. It is supposed to be a type of a P-Zombie creature that exhibit a primitive form of consciousness. Currently this character can only be control by the player as an indication of its non-will and non-intention. In future developments of the game the humanoid will be able to demonstrate thinking skills, when engaged in dialogue or come in contact with various objects in the game world.

Creating a Character

The humanoid character is using the Space Robot Kyle asset (version 1.0) from the unity asset store. For its animation and control, a modified script from the Unity Standard Assets is used.



The first person character is without a body and it is utilizing the free asset: First Person All-in-One (version 20.6.13cu).

User Interface

Overview

The user interface consists of keyboard and mouse input following the standards of the first person shooters genre.

User Interface Keyboard

Keyboard controls:

- "WASD" or arrow keys to move around,
- "E" key to active humanoid control when the player is near a computer,
- "Q" key to exit humanoid control any time
- left "Shift" key to run in first-person mode
- left "Control" key to crouch in first-person mode
- "C" key to crouch the humanoid in second-person mode
- "Return" key to start the game in the first introduction screen
- "Escape" key to quit the game anytime

User Interface Mouse

The mouse movement controls the head looking direction of the first person character in both modes.

Single-Player Game

Overview

The game has only a single-player mode at this point. It does not have any concrete goals to achieved. Its exploratory gameplay focuses on the emotional experience of taking control of something that you aren't sure if you should treat it like an object or a subject.

Story

The story of takes place at the PZoid research facilities. You are a scientist-researcher examining humanoids in order to asses their conscious level. You are assigned to test the humanoid model #3123 and asses its capability of movement.

Time of Gameplay

In the current version of the game 2 to 5 five minutes of gameplay would suffice for experiencing the game.

Victory Conditions

The game is exploratory, there are no victory conditions.