E. I. – Emotional Intelligence

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April 19, 2007

1 Abstract

When I first got my Nintendo Wii, one of the first games I got was Zelda: Twilight Princess. Zelda: Twilight Princess is an epic game about a boy named Link whose home, the kingdom of Hyrule, is attack by an evil wizard from a parallel dimension called the Twilight Realm. [1]In this game the player Link, must save the both Kingdom of Hyrule and the Twilight Realm with help from his impish sidekick from the Twilight Realm, Midna. For me Zelda: Twilight Princess was not just psychologically immersive, but also emotionally immersive. What made this happen for me was the richly defined characters in world of Zelda: Twilight Princess and the relationship established between my character and the other character by the game's plot. Zelda: Twilight Princess did an especially great job of establishing a strong emotional relationship between the player's character, Link, and his sidekick Midna, thus creating a emotional bond between the player and the non-player character(NPC), Midna. However the strong and dynamic relationship between Link and Midna demonstrated in the cutscenes was not well reflected in the gameplay. While I felt that Midna was a separate and unique character in the story and cut-scenes of the game, I did not feel that way in the gameplay. So this brought me to the question of "Can I make an NPC sidekick for an action game that felt alive during gameplay that the player could emotionally connect with?"

I believe that this is possible by 1) creating a behavior system for an NPC which gives the illusion of its individual agency and ability to act according to its impression of the player, 2) creating cooperative and reciprocal gameplay mechanics that establish the relationship between the player and the NPC, 3) creating a narrative that outlines the progressing of the relationship between the player and the NPC that also brings context to the challenges that tests their relationship, 4) writing a believable sidekick character.

General Terms: Game design, Character design
Keywords: Non-player character, Cooperative game mechanics, artificial personality, narrative

2 Description

2.1 Background

Games that have featured sidekick NPCs come in three forms: damsel in distress, the attack buddy and the team player. These archetype are defined by the type of relationship the player has with the NPC within gameplay.

2.1.1 Damsel in distress

The damsel in distress is often a female character that is usually helpless and requires the player to escort her through dangerous environments and bring her to safety. An example of this is in ICO where the player must escort a girl named Yorda through a monster-infested castle.[9] In Resident Evil 4, the player must escort the president's daughter, Ashley Graham, through a zombie infested village.[7]

2.1.2 Attack buddy

The attack buddy is a type of NPC that usually helps the player attack the enemy. These NPCs are often used in First Person shooters. In Half-Life the player runs into a security guard named Barney , who will follow you and attack any enemies you run into.[11]

2.1.3 Team Player

Team players are not necessarily sidekicks by nature. They are a set of characters that the player switches between as the avatar that he can control. Often characters not in the player's control are designed to follow the player as in "Lost Vikings." [8] In other instances, the characters not controlled by the player will only show up when the player needs assistance or needs to perform an action that requires the other character as in "TMNT." [10]

2.2 Narrative and Universe

The narrative of the game will provide the context for the type of challenges the game will present to the player and the NPC. The narrative will help represent the overarching structure of the game as well as the overarching story between the player and the NPC.

Though the narrative of my thesis has yet to be established. I will present a simple narrative for the sake of explaining the systems in my thesis.

So let us assume that the story of my game is about a boy, who wanders into the deep and mysterious mansion of a mad scientist. The scientist find hims and locks him up deep in his underground lab. In the lab the boy discovers that a mysterious alien creature who is imprisoned in the cell across from him. Somehow, the boy manages to escape from his cell but inadvertently also releases the alien as well. This is where the game starts. The player plays the boy, and

the alien called Kip is the NPC sidekick. Together the boy and alien must escape the scientist's mansion.

2.3 Reciprocal game mechanics and behavior system

What I hope to create in my game is a psychological model for the NPC, that has the ability to like or dislike the player, depending on the player's actions towards it. This has been attempted as far back as 1987 in Chris Crawford's "Trust & Betrayal: The Legacy of Siboot." [3] In this game the player must psychologically manipulate other NPCs and socially engineer alliances during the day, so that the player can win mind battles at night. To make psychological manipulation possible, the NPCs were programmed to have dynamic levels of trust, love, and fear for the player. These were affected by certain actions the player used on the NPC, such as threaten, complement, and promise. Crawford calls this model, "Artificial Personality." Crawford states,

> "Artificial personality is concerned with the capturing of human nature in algorithmic form, and is more properly treated as lying in the field of the arts rather than the sciences." [2]

More recent are the sophisticated procedurally generated artificial personalities seen in Will Wright's "The Sims." [12]

Unlike "The Sims" the artificial personality in my game will not be procedurally generated. It is not an open-ended system, but rather a specific character crafted by me through traditional writing techniques. The design of the character based on the writing will define manner the character acts in the cut-scenes and the model of the character's personality in the game. This model will dictate the decisions the character makes in the game.

In my thesis cooperation from the NPC cannot be assumed, it must be earned. The NPC is programmed with a certain level of affinity for the player. The NPCs affinity is influence by the players actions towards the NPC. For example the player can gather food and feed the Kip the alien. This not only boosts the Kip's health, but also boosts Kips affinity for the player. This allows for situations where the player must decide to be generous towards Kip. For example the Kip and the player may come out of a situation where both their health levels are low. And the player only has one ration of food. He would have to decide whether to eat it himself or feed it to Kip. If the player feeds himself, he boosts his health, but may disappoint Kip. If the player feeds Kip, Kips health and affinity for the player is boosted.

Another action that player can do to affect Kips affinity is to protect Kip. For example if an enemy attacks Kip with bullets, a player can boost Kips affinity by shielding Kip from the attack.

Action such these are not unilateral. If Kip likes and trusts the player, Kip might reciprocate these actions by himself. So if the player finds food for Kip, Kip will find food for the player. If the player protect Kip, Kip will protect the player.

My hope is that the reciprocation between the player and the NPC(Kip) will create a symbiotic relationship that helps foster an emotional bond between the player and the NPC.

2.4 Scope & Genre

The heart of my thesis lies within NPC's artificial personality and its integration with the gameplay and the story. Unlike other works that execute drama through NPCs, such as Facade, my thesis does not involve chatbots. [5] The player can not chat with the NPC, but rather the players intent is communicated through his actions towards the NPC.

Also while most game with artificial personality are open ended systems revolving around dialogue and social interaction like "Facade" and "the Sims," my thesis is focused on how artificial personality systems would serve to heighten drama in the more linear context of an action/adventure game.

The game may have a narrative embedded with in it, but it is not an interactive narrative that utilizes branching storylines or any non-linear story structure. On the other hand, this game is also not a sand box game, where the player is allowed to roam an open world, where he can pick and choose his challenges as he pleases.

The focus of my thesis is on the reciprocal mechanics that form the relationship between the player and the NPC.

2.5 Platforms

There are two main platforms I am considering developing this game on.

- **Flash** is a vector-based web platform installed on most web browsers. The benefits of developing on flash is that the overhead of art asset development and graphical programming is lower. However being a vector-base and web-based platform may limit the game to 2D and limit its over all performance.
- **OGRE** is an open-source 3D graphics engine. Developing on OGRE gives access to high quality graphical features, but would require a higher art development and programming overhead compared to Flash.
- **Torque 2D** is a game engine designed specifically for developing 2D game. Though it may not have the install base of Flash, it performs much better than Flash and possibly better than OGRE as a 2d game engine.

3 Timeline of Tasks and Milestones

See Thesis Project Plan

4 Budget

See Thesis Project Outline

5 Advisors

- Chris Swain - Assistant Professor in the USC School of Cinematic Arts Interactive Media Division.
- Danny Bilson - Adjunct Faculty in the USC School of Cinematic Arts, writer, director, producer.

6 Possible Venues

- **Proprietary website** - This will be the main website hosting the thesis game
- **Independent Game Festival** - This is an event held within the Game Developer Conference in San Francisco that showcases game produced by independent developers submitted to the competition. Along with the regular competition there is also a student competition.
- **Gamasutra** - This is a website dedicated to professional game development. There are easy opportunities to submit thesis papers to this website.
- **Game Developer Magazine** - This is a magazine dedicated to professional game development. Articles can be submitted to the publication, however the magazine is not a journal, academic papers are not often published.
- **Game Developers Conference 2008 Poster Session** - Poster Session are smaller sessions within the Game Developers Conference. Usually students will submit posters to be showcased. Students that are chosen are designated a session to discuss their topic.
- **Sandbox** - This is a video game symposium hosted by SIGGGRAPH along with the SIGGRAPH conference. There are opportunities in this conference to submit games and papers.

7 Related Past Work

In an interactive narrative class I took during the first year, I created a flash applet, called VirtuaKen. It involved interviewing a virtual avatar of myself, by selecting from a list of questions. Each question had a certain emotional weight associated with it that would affect the emotional state programmed in VirtuaKen. So it was possible to ask questions that offended him or boost his

ego. The emotional state of the avatar was persistent, so the more offensive question the player asked, the more he showed he did not like the player. [4]

8 Related Fields of Study

Social interaction between robots and humans such as Keepon the dancing robot. [6]

9 Prior Art

Topic	Secondary Characters	Archetype	Main Interaction	Relationship to Main
▼ ☐ Other examples and prior art				
• ☐ Nintendo R.O.B.	ROB the robot	sidekick	opens doors	buddy
• ☐ ICO	Yorda	damsel in distress	gets in trouble	love interest
• ☐ Zelda: Twilight princess	Midna	sidekick	attack enemies	buddy/ love interest
• ☐ Planet Fall	floyd	sidekick		
• ☐ MGS3	Eva	damsel in distress	gets in trouble	love interest
• ☐ Resident Evil 4	Ashley Graham	damsel in distress	gets in trouble	love interest
• ☐ Half-Life 2	Alax Vance	damsel in distress	shoot enemies	love interest
• ☐ Half-Life 1	Barney Clahoun	sidekick	shoot enemies	buddy
• ☐ Army of two		sidekick	attack, assist	buddy
• ☐ Super Mario 3	Yoshi	Ride	transportation / attack	pet
• ☐ TNMT	interchangable	Team members	attack assist/ movement assist	brothers
• ☐ Ghostbusters	interchangable	Team members		team members

References

[1] Eji Aonuma. The legend of zelda:twilight princess. video game, November 2006.

[2] Chris Crawford. Blowing my siboot-horn.

[3] Chris Crawford. Trust & betrayal: The legacy of siboot. video game, 1987.

[4] Ken Leung. Virtuaken. flash applet, 2006.

[5] Michael Mateas and Andrew Stern. Façade. video game, July 2005.

[6] Marek Michalowski and Hideki Kozima. A dancing robot for rhythmic social interaction. In *HRI*, March 2007.

[7] Shinji Mikami. Resident evil 4. video game, January 2005.

[8] Silicon & Synapse. The lost vikings. video game, 1992.

[9] Fumito Ueda. Ico. video game, September 2001.

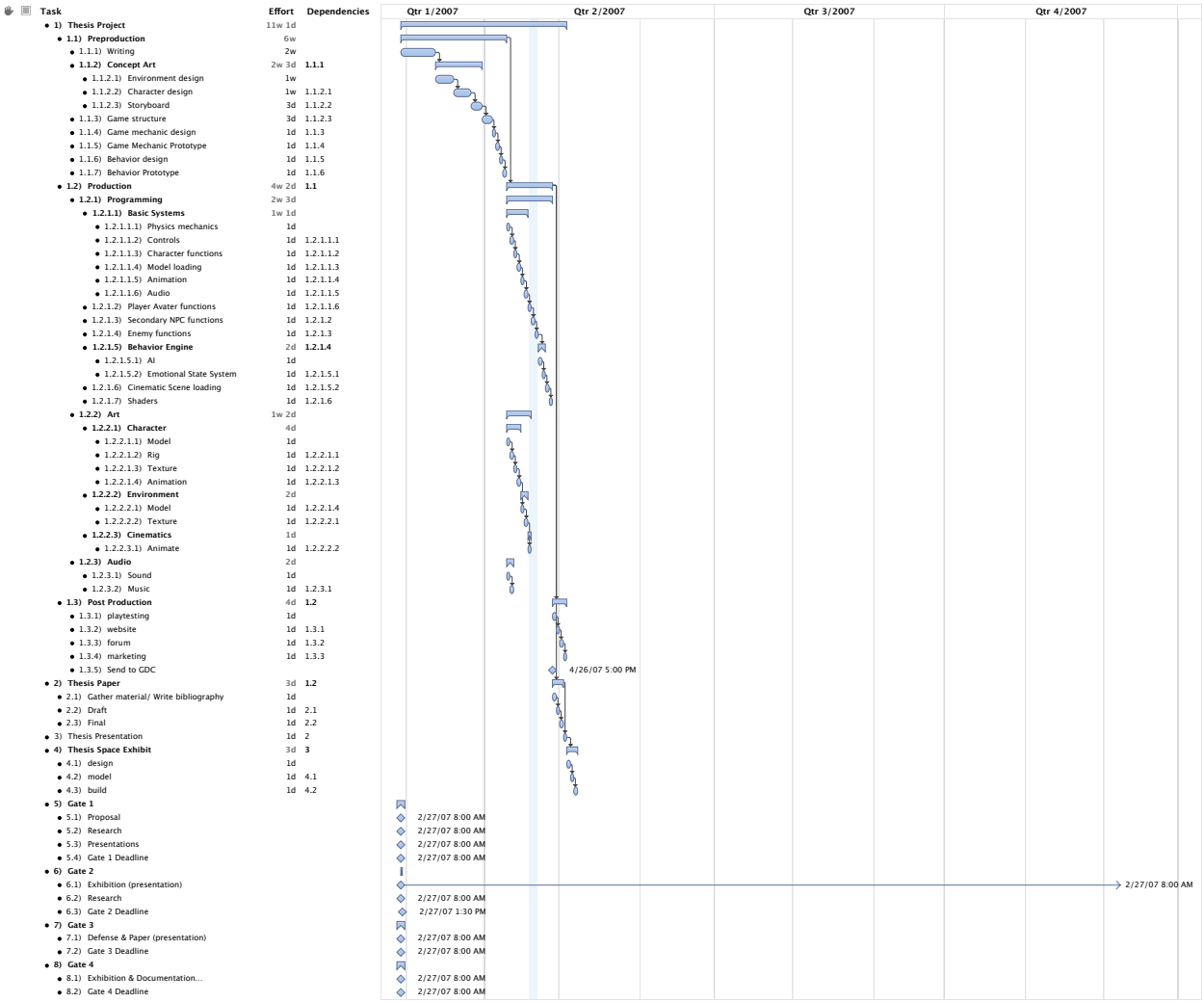
[10] `Ubisoft Montreal` Tmnt. video game, March 2007.

[11] `Valve Software` Half-life. video game, November 1998.

[12] Will Wright. The sims. video game, February 2000.

Budget

Topic	**Budget**
☑ Dev tools	
☐ Graphics	
☐ Artist	250
☐ Programming	
☐ Programmer	500
☐ Animation	
☐ Animator	250
☐ Modeling	
☐ Modeler	250
☐ Music	
☐ Composer	250
☐ Marketing	
☐ Website	150
☐ Poster	
☐ Cards	
☐ Festivals / Contest	
☐ IGF @ GDC	
☐ Slamdance?	


Task
Effort
Dependencies
Qtr 1/2007
Qtr 2/2007
Qtr 3/2007
Qtr 4/2007
1) Thesis Project 11w 1d
1.1) Preproduction 6w
1.1.1) Writing 2w
1.1.2) Concept Art 2w 3d 1.1.1
1.1.2.1) Environment design 1w
1.1.2.2) Character design 1w 1.1.2.1
1.1.2.3) Storyboard 3d 1.1.2.2
1.1.3) Game structure 3d 1.1.2.3
1.1.4) Game mechanic design 1d 1.1.3
1.1.5) Game Mechanic Prototype 1d 1.1.4
1.1.6) Behavior design 1d 1.1.5
1.1.7) Behavior Prototype 1d 1.1.6
1.2) Production 4w 2d 1.1
1.2.1) Programming 2w 3d
1.2.1.1) Basic Systems 1w 1d
1.2.1.1.1) Physics mechanics 1d
1.2.1.1.2) Controls 1d 1.2.1.1.1
1.2.1.1.3) Character functions 1d 1.2.1.1.2
1.2.1.1.4) Model loading 1d 1.2.1.1.3
1.2.1.1.5) Animation 1d 1.2.1.1.4
1.2.1.1.6) Audio 1d 1.2.1.1.5
1.2.1.2) Player Avater functions 1d 1.2.1.1.6
1.2.1.3) Secondary NPC functions 1d 1.2.1.2
1.2.1.4) Enemy functions 1d 1.2.1.3
1.2.1.5) Behavior Engine 2d 1.2.1.4
1.2.1.5.1) AI 1d
1.2.1.5.2) Emotional State System 1d 1.2.1.5.1
1.2.1.6) Cinematic Scene loading 1d 1.2.1.5.2
1.2.1.7) Shaders 1d 1.2.1.6
1.2.2) Art 1w 2d
1.2.2.1) Character 4d
1.2.2.1.1) Model 1d
1.2.2.1.2) Rig 1d 1.2.2.1.1
1.2.2.1.3) Texture 1d 1.2.2.1.2
1.2.2.1.4) Animation 1d 1.2.2.1.3
1.2.2.2) Environment 2d
1.2.2.2.1) Model 1d 1.2.2.1.4
1.2.2.2.2) Texture 1d 1.2.2.2.1
1.2.2.3) Cinematics 1d
1.2.2.3.1) Animate 1d 1.2.2.2.2
1.2.3) Audio 2d
1.2.3.1) Sound 1d
1.2.3.2) Music 1d 1.2.3.1
1.3) Post Production 4d 1.2
1.3.1) playtesting 1d
1.3.2) website 1d 1.3.1
1.3.3) forum 1d 1.3.2
1.3.4) marketing 1d 1.3.3
1.3.5) Send to GDC
4/26/07 5:00 PM
2) Thesis Paper 3d 1.2
2.1) Gather material/ Write bibliography 1d
2.2) Draft 1d 2.1
2.3) Final 1d 2.2
3) Thesis Presentation 1d 2
4) Thesis Space Exhibit 3d 3
4.1) design 1d
4.2) model 1d 4.1
4.3) build 1d 4.2
5) Gate 1
5.1) Proposal 2/27/07 8:00 AM
5.2) Research 2/27/07 8:00 AM
5.3) Presentations 2/27/07 8:00 AM
5.4) Gate 1 Deadline 2/27/07 8:00 AM
6) Gate 2
6.1) Exhibition (presentation) 2/27/07 8:00 AM
6.2) Research 2/27/07 8:00 AM
6.3) Gate 2 Deadline 2/27/07 1:30 PM
7) Gate 3
7.1) Defense & Paper (presentation) 2/27/07 8:00 AM
7.2) Gate 3 Deadline 2/27/07 8:00 AM
8) Gate 4
8.1) Exhibition & Documentation... 2/27/07 8:00 AM
8.2) Gate 4 Deadline 2/27/07 8:00 AM