Contingencies in Behavioral Mode: Enhancing Player’s Adaptive Ability

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Abstract. Metamorph is a stealth action RPG with both open world and mission-based settings. Adopting the elements of cyberpunk and capitalistic system with immense number of AIs, this game is set in a futuristic-style city with four main districts, each with different culture and building design. The player will play as Centauri, a cyborg who joins Private Sector Resistance in order to stop the Private Sector that produces war machines which are in form of droids with artificial intelligence from colonizing the world. There is a wide range of enemy types, two gameplay styles and various game mechanics in order to complete the missions, this game focuses on player’s adaptive and cognitive abilities throughout the levels.

Index Terms— Stealth, Action, RPG

1. Introduction
Having similar elements with Watchdogs 2 and Metal Gear Solid, this game has variety of enemies and two different gameplay styles which are stealth and combat modes. However, Metamorph has a feature where the players can copy the enemies’ abilities through a shoot-em-up minigame by using info cards throughout the game levels to complete the mission.

2. Literature Reviews
Based on the journal, video games and animated movies often make use of abstract-looking characters that portray complex personalities, or, in video games, that interact with the player to influence the gameplay and experience [1]. Regarding the characters in this game, each NPC are designed with specific facial features and their own unique body shapes for some purposes. The purposes are to make the player engage more in the story and to able to determine the enemies based on their design.

Another inspiring journal mentions that a designer should concentrate his efforts on the player’s experience, instead of trying to anticipate the player’s skill level [2]. Instead of a multiplayer game that depends heavily on the player’s skill level, this game focuses on the story itself and the player’s experience by learning the game mechanics and the environment, therefore enhancing the familiarity with the settings and adaptive ability of the player from completing each level.

Also, this game will apply the function of a mini map during both the travelling mode and missions. Mini map navigation system is a technique that is used in videos games to help...
guide the user through large expansive explorable worlds. It acts as an in-game GPS system and follows the user as well as highlighting specific areas of interest [3]. Cut-scene presentation is used widely as a platform for game storytelling [4]. Therefore, we also plan to include cutscenes for the players to understand the story better and enjoy the animation.

3. Behavior Design
The behaviors document covers the various “behaviors” or “modes” that major characters in the game may fall into.

3.1. Introduction
Compared to other games with the same genre, this game has a special feature which allows the player to collect enemy info cards from the enemies by completing a shoot-em-up minigame and transform. After the transformation, Centauri will have the same abilities as the enemy he transforms into within a time limit.

![Fig. 1. Accessing Info Card for Transformation](image)

This game is still entertaining when replayed as it has two different gameplay styles and there can be a lot of different walkthroughs to finish each mission, given that it follows bottle-necking flow model for each level design. There are also several different save slots that wouldn’t collide with one another, so if the player wants to start a new game, they could go to the other save slot.

![Fig. 2. In Game Save Slots](image)

3.2. Background Studies
Behavior document basically covers what happen and what the player can do under different conditions, which can be connected with behavioral psychology, as it focuses on experiments and observable actions. The behavioral principles discussed should be understood to have benefits and limitations [7].

This document has the element of contingencies, which means an arrangement for dealing with something that might possibly happen or cause problems in the future [6]. There are essentially two fundamental sorts of contingencies, ratios and intervals. Each mode will have its ratios of happening
and intervals of the mode according to its purpose, which is to optimize and make the game more interesting.

3.3. Game Concept and Design

(a) Maps / Paper Design

![Fig. 3. Full Map Design Zoom Out](image)

![Fig. 4. Map Design Zoom In](image)

(b) Games Environment

The game environment in the missions would take place in a more closed area such as buildings and facilities, which means the player cannot roam as freely as during the open world. The purpose is to let the player to collide with obstacles and enemies more easily and increase the difficulty of the game.

The game environment in travelling or open world mode is set in a cyberpunk, futuristic world where the timeline is post-World War 3 era. The game has four ‘districts’ which are wide areas for the player to explore, namely Mare, Salem, Industrial Zone and Furuka. The environment of this mode is much more peaceful and are mostly populated with friendly filler NPCs. However, player can also encounter some critical filler NPCs that will attack under some circumstances such as police and assassins, therefore triggering the combat mode.

(c) Characters / NPCs / Resources

Playable Characters
- Centauri

The main character is a cyborg that uses battery as its main source, his heart will continue to pump artificial blood with the energy from the battery. Sometimes he has to charge the battery, so he had a charging plug on his left hand, which also serves as a pen drive so he can hack other robots around him and/or use their abilities.
This cyborg has 600 SP (shield points) from the start and can be enhanced up to 800 SP by upgrading the skill tree. If the SP has depleted completely, the player will die from one hit. SP can be recharged with batteries and it can be found in the environment as well as the saving point (one time use).

For the default weapon, player has an assault rifle with a plasma scimitar blade at the bottom part of the gun. For the default magazine, it holds 5 bullets at a time. The rifle deals 100 dmg per normal hit and 200 dmg per critical hit. In order to get critical hit, player has to shoot precisely to the head area. The crescent-shaped scimitar blade (short range) deals 150 dmg per normal blow and 300 dmg per lethal blow. To get lethal blow, player has to successfully strike the neck area. Player can also stun the enemies within range (1m-1.5m) for 2 seconds by this combo: dash, jump, strike. However, if player attempted this in range less than 1m, the enemy will counterattack the player with 100% critical hit. On the other hand, if more than 1.5m, the player will just tumble a bit and try to keep his balance for 1 second.

Non-Playable Characters (Friendly)
- Dr. Glas
  The Doctor who helps Centauri since he woke up in the laboratory. She is secretly a part of the Private Sector Resistance who constantly gives missions to the player. Completely dedicated to her job, she takes most things seriously and wouldn’t let Centauri goof around with his sarcastic personality too much.
Fig. 7. Centauri Character Mechanics

- **Ruinne**
  Friendly NPC who sells weapon modifications, consumable items and help Centauri upgrades his core in Mare District. Even though he looks unapproachable, he's brilliant in business marketing and monopolizes the market.

- **Kin**
  The Mastermind who owns the private sector, a very mysterious man who aims to use his power to get what he wants.
Non-Playble Characters (Normal Enemies)

- PR-41 (Patrol Bot)
  Light Robot Enemy with enhanced awareness system. Cannot attack player, however has an ability to call androids from nearest locations if player was found. 150 Health Points.

- Eetu-16 (Light gunner)
  600 HP - Attacks any hostile in sight with a submachine gun, medium range. While engaging in combat mode, they deal 15 dmg on normal hits and 30 dmg on critical hits (15% chance) and the ammo capacity is 15. They can also dodge player’s attacks (sword 20%, bullet 30%).

- DK-33 (Swordsman)
Fig. 12. DK-33 Concept Design

700 HP - Attacks any hostile in sight with a long sword, relatively short range. While engaging in combat mode, they can do normal attack (120 dmg, 150 dmg crit), thrust (deals 150 dmg, 200 dmg crit), block (sword 50%, bullet 70%), and dodge (sword 40%, bullet 30%). Gun attacks work more efficiently when player is in stealth mode, sword attacks work more efficiently in combat mode.

- Fighter-21 (Powerbot)

Fig. 13. Fighter-21 Concept Design

800 HP - Attacks any hostile in sight with their fists, short range. They can also break down doors while chasing the target. While engaging in combat mode, they can do normal attacks (150 dmg, 200 dmg crit) and dodge (sword 60%, bullet 40%).

- Eagle-43 (Sniper)

Fig. 14. Eagle-43 Concept Design

500 HP - Shoots any hostile in sight, long range. They can also shoot through windows and from another building. Before shooting, target will be warned by red laser (not on target) and reddish HUD
(on target). Body shot (70% chance) deals 200 dmg, vital shot (25% chance) deals 300 dmg and headshot (5% chance) triggers instant death.

- Annihilator 2.0 (Heavy Gunner)

![Annihilator 2.0 Concept Design](image)

Fig. 15. Annihilator 2.0 Concept Design

800HP - Shoots any hostile in sight, long range. While in combat mode, deals 4 shots/second with 20 dmg per normal shot and 30 dmg/critical shot. Their shootings last for 8 seconds before reloading for 4 seconds. Since they are pretty slow compared to player, the accuracy is 40%.

Non-Playable Characters (Minibosses)

- Stash

![Stash Concept Design](image)

Fig. 16. Stash Concept Design

A skillful assassin who survived through WW3.

- Slain

![Slain Concept Design](image)

Fig. 17. Slain Concept Design
A skillful assassin who survived through WW3.

- Zuina

![Zuina Concept Design](image1)

Fig. 18. Zuina Concept Design

A samurai from the third district who was brainwashed by the private sector. Lieutenant of Dullahan who was commanded to patrol around the second district and eliminate the wanted cyborg which is the player. Once defeated and her visor is broken, she came to her consciousness and became a friendly NPC who gives the player sub missions.

![Zuina Post-battle Concept Design](image2)

Fig. 19. Zuina Post-battle Concept Design

**Non-Playble Characters (Bosses)**

- Beta Ceti

![Beta Ceti Concept Design](image3)

Fig. 20. Beta Ceti Concept Design
The first boss encountered in the game. She is guarding the Gate of the 1st District, Mare.

- Abbad & Ali

![Abbad and Ali Concept Design](image1)

Fig. 21. Abbad and Ali Concept Design

The bosses as well as the sultans of 2nd district, Salem.

- Dullahan

![Dullahan Concept Design](image2)

Fig. 22. Dullahan Concept Design

The boss of the industrial zone. There are 2 stages of the Boss Fight with Dullahan.

- Amok (DLC)

![Amok Concept Design](image3)

Fig. 23. Amok Concept Design

Mafia leader of the 3rd district who will only be available in the DLC after the main story ends. Also called as “Reaper of the East”.
(d) Resources

(i) Boosters
First type is the boosters that will help players with gameplay. This kind of items are basic items like stamina and HP restoration items.

- *Energy core*: This is the important item for filling up the energy scale of the Centauri, because if player will run out of energy, then his shield bar will not be filled.
- *Shield booster*: Item for instant filling up the shield bar.
- *Extended weapon ammo 1*: This item increases the amount of bullets player can shoot before cool down, from 5 to 10.
- *Extended weapon ammo 2*: This item increases the amount of bullets to the maximum that Centauri's stock rifle can have - 15 bullets.

(ii) Enemy Info Cards
This is the type of items that gives player the ability to transform himself into the same type of the enemy, from which he got the information card, so he will gain this enemy’s abilities and specs. Those information cards could be acquired by hacking the enemies.

(iii) Spy Gadgets
Third type of items available to the player are the “spy gadgets”, that will make stealth gameplay easier for the player. However, they have limited time of application and can reveal player’s position, if usage is abused.

- *Sonar*: The type of “spy gadgets” that player can use for knowing the enemy's location without visual contact. It could be used for 30 seconds with cool down of 3 minutes. It does not reveal position of player if used, but the enemy's position will be revealed only if they are moving and only when player is looking in their direction.
- *Radar*: Radar is more precise gadget for enemy tracking, as player does not need to look in the enemy’s direction, as their position will be displayed on the radar circle. Duration of radar usage is 30 seconds and cool down 1.5 minutes. However, if player will use it longer than 15 seconds, enemies will notice him and attack.

(e) Behavior Modes Concept Design

(i) Combat Mode
Combat mode is activated when enemy detects player. For fighting enemy, player can fight them with the default weapon (assault rifle and scimitar blade) or use “robot info cards” to transform to other types of robots that player hacked in past missions.

(ii) Transformation Mode
While transformed player can use abilities of the droids he transformed to. The time player can be in transformed condition is limited by time. After this there will be “skill cool down” before he can transform again. Player can equip only 4 “info cards” at a time, so player needs to decide which type of droids he wants to use beforehand.
(iii) Injured/Low Energy Mode
In the game SP and Energy bars are strongly related to each other. SP (shield point) bar is basically is hit points of energy shield that could be automatically regenerated while there is energy in energy scale. When energy hits zero, it makes impossible to transform to other types of robots, and regenerate energy shield.

(iv) Adventure / Travelling Mode
Player can fast travel from one location to another location using Post Tubes. Post Tube is a metallic tube that moves on a rail with very high speed. This will be available during certain missions and will be available during some points where the player can relax and explore the places like any other open world games.

(v) Hacking Mode
When player successfully hacked the enemy (minimum 0.5m distance), the player will be brought to a shoot-em-up minigame. In this mode, the player will be a spaceship and they will have to shoot the enemies while staying alive. They have three lives at the beginning and can survive with at least one live. If successful, the player can acquire the enemy’s ability until that particular mission ends.

(vi) Sniper / Focus-Target Mode
This is only available when the player acquire the sniper ability (robot info card) through hacking mode. It is not available for eternity as all the skills player acquired throughout the game will be reset on the beginning of each missions. If there is no sniper enemy around, this mode will be unavailable.

(vii) Minigame Mode
One of the main game modes and mechanics is hacking mode used for hacking the hostile droids. The process of hacking will look like “Bullet hell” type games. After successful hacking, enemy droid will be disabled, and player will be able to get “robot info card” (used for further transformation). If hacking failed, player will get light damage and enemy droid will call reinforcement.

(viii) Stealth Mode
Player can also use robot info cards in this mode. This mode doesn’t limit the player’s ability to use their weapons as long as they are not detected and they can actually do more stuff, such as using spy gadgets and triggering some devices in the environment to defeat the enemies instead. But this mode allows the player to finish the mission while avoiding engaging the enemies face-to-face in combat and reinforcement calls. However, this mode will be unavailable in some cases, such as boss fights.
(f) **Implementation and Testing**

![First Mission Map](image1)

*Fig. 24. First Mission Map*

![Map Legends](image2)

*Fig. 25. Map Legends*

The 1st mission after the tutorial has the player visit a factory in Mare to investigate the factory’s manufactured products and its client.

The factory’s level is separated into two different routes, namely ‘On the floor’ route and ‘In the vent’ route. The name is straightforward, ‘On the floor’ means the player will be playing it on the factory interior grounds while ‘In the vents’ has the players play through the level through the factory vents. Since the factory is only a singular building, the ‘In the vent’ route is stacked on top of ‘On the floor’ route.
'On the floor’ route lets the player play through the level with a very straightforward play style, letting the players engage in combat freely. ‘In the vent’ route, however, requires the player to play with a stealthier play style.

4. Conclusions & Future Recommendations
Metamorph is an action RPG that applies both stealth and combat elements with both open world and mission-based settings. Compared to other RPGs with similar functionalities, this game has several unique features as its hooks, such as a shoot-em-up minigame and ability to copy enemies’ abilities through transformation. There are eight behavior modes available in this game with their own contingencies. Future enhancements would include a free DLC which covers one of the districts, *Furuka*. It is an unlockable content that will be available in a downloadable content pack which is planned to be released in the future, it will not be playable when the game launches. This DLC will let the players encounter new enemies and uncover the mystery behind Private Sector mastermind’s smile.

References
[1] Y. Ferstl, E. Kokkinara, and R. McDonnell. *Facial Features of Non-player Creatures Can Influence Moral Decisions in Video Games*. ACM Trans. Appl. Percept. 15, 1, Article 4, September 2017, pp.1-12.
[2] A. Bouzouane, B. Bouchard, and J. Tremblay. *Adaptive Game Mechanics for Learning Purposes - Making Serious Games Playable and Fun*. CSEDU 2010 - Proceedings of the Second International Conference on Computer Supported Education, Valencia, Spain, April 7-10, 2010 - Volume 2.
[3] C. Carter, Q. Mehdi, and T. Hartley. *Navigational techniques to improve usability and user experience in RPG Games*. The 17th International Conference on Computer Games. University of Wolverhampton, UK, 2012, p.86.
[4] S. Tang, M. Hanneghan. *Game Content Model: An Ontology for Documenting Serious Game Design*. 2011 Developments in E-systems Engineering, Liverpool John Moores University, UK, 2011, pp. 431-436.
[5] J. H. Camelo, R. L. Rabelo, and E. Passos. *Automatic Mapping Between Gameplay And Aesthetics RPG Character Attributes Through Fuzzy System*. 2014 Brazilian Symposium on Computer Games and Digital Entertainment, 2014, pp. 220-229.
[6] Contingency. (N.D.) In Cambridge Business English Dictionary. Retrieved from https://dictionary.cambridge.org/dictionary/english/contingency
[7] J. Hopson. (2001) *Behavioral Game Design*. Gamasutra. Available at: https://www.gamasutra.com/view/feature/131494/behavioral_game_design.php?page=2 [Accessed : 18 June 2019].