Game Design Analysis
Assassin's Creed's Combat System

Feature Overview

- Player combat ability reflects the player fantasy of being a deadly assassin.
  - Striking from the shadows should provide the best results.
  - Combat style revolves around grace, not power.
  - Deadly Counter Attacks.
  - Use of light and agile weapons.
- Interaction with other gameplay systems: stealth and aerial navigation.
  - Player has special instant-kill assassination abilities.
- Two distinct combat stances.
  - Player has access to both offensive and defensive abilities during combat.
- Visually stunning execution of combat moves.
- Small variety of weapons available.
  - Best combat results are achieved by effective usage of weapons.
- Provides a combat environment where the player can effectively prevail against overwhelming odds.
  - One on one engagement even when fighting large number of enemies.
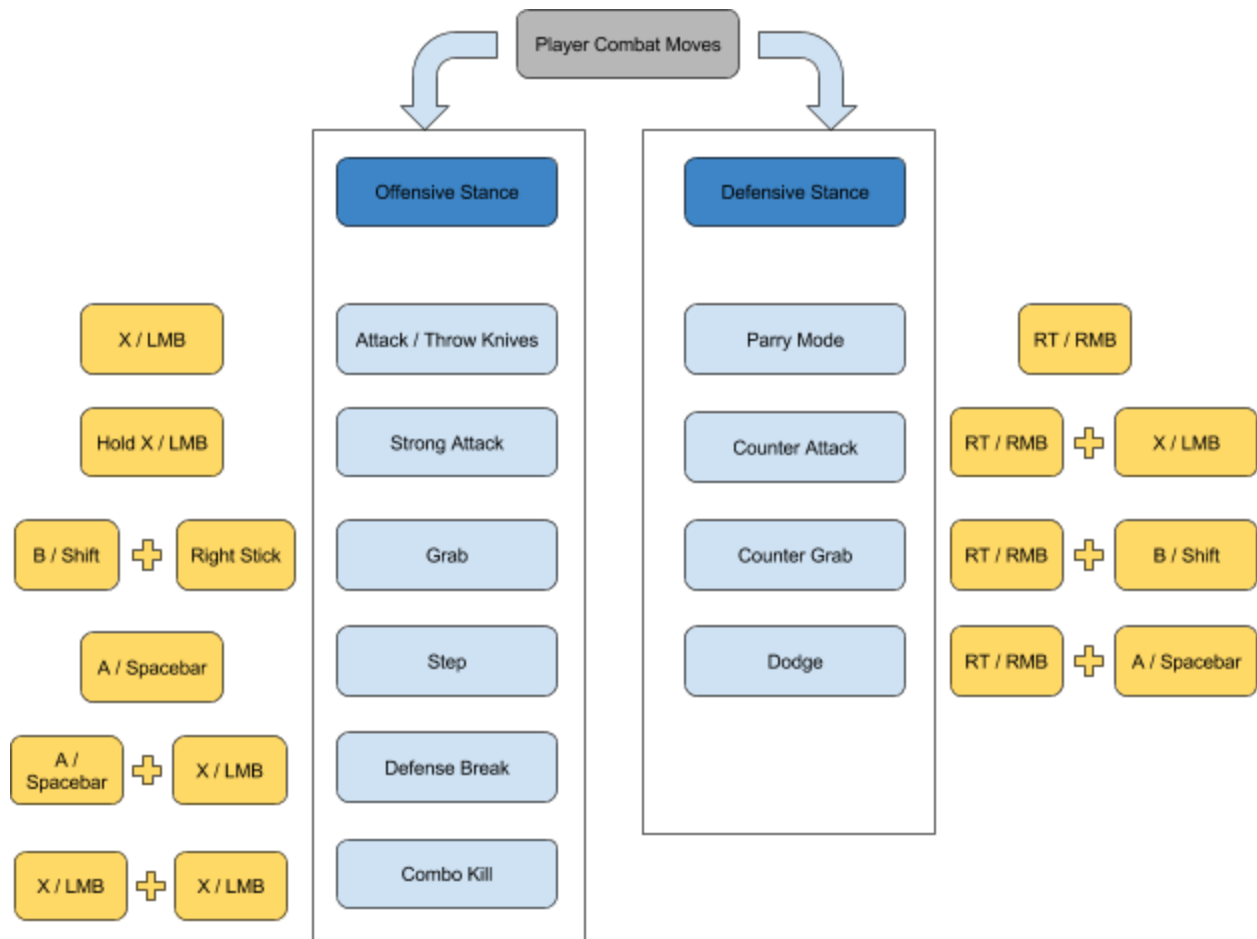 - Paired animation system.

Gameplay Overview

Available weapons Overview:

Fists	Can stun unarmed or unaware targets. Useful for interrogations. Deals insignificant amount of damage to armored targets.
Hidden Blade	Main weapon used for assassinations. Can kill single targets in low profile without raising suspicion. Instantly kills unaware targets.
Short Blade	Quick and deadly Counter Attacks. Short Counter attack timing window. Low damage on offensive attacks. Short range. Most successful Counter Attacks result in instant kills.

	Used in combination with throwing knives.
Throwing Knives	Available while the Short Blade is equipped. Available after locking onto a distant target while the Short Blade is equipped. A knife is thrown by attacking that distant target.
Long Sword	Standard high profile combat weapon. Useful for both offense and defense. Longer counter attack timing window. Medium attack range. Offensive attacks do average damage. Can execute a slower but more powerful attack.

Player Combat Stances:

- Combat mode is activated automatically when the player is detected by NPCs that are actively looking for the player.
- Combat mode is activated after the player performs a hostile action towards guards and other armed NPCs.
- The combat actions the character may take are different based on the stance the player is currently using.
- Stance is changed by holding the RT/RMB.

Player Combat Moves

Offensive Stance

Button	Move
X / LMB	Attack / Throw Knives
Hold X / LMB	Strong Attack
B / Shift + Right Stick	Grab
A / Spacebar	Step
A / Spacebar + X / LMB	Defense Break
X / LMB + X / LMB	Combo Kill

Defensive Stance

Move	Button
Parry Mode	RT / RMB
Counter Attack	RT / RMB + X / LMB
Counter Grab	RT / RMB + B / Shift
Dodge	RT / RMB + A / Spacebar

Offensive Stance:

- Default player stance.
- Can execute several offensive combat abilities.
    - Abilities slightly vary based on equipped weapon.
    - Animations and speed of execution vary based on equipped weapon.

Attack:
- Basic Weapon Attack.
- Press weapon button while in combat.
- Executes Attack towards focused enemy.

Throw Knife:
- Ranged Attack
- Requires Short Blade weapon.
- Pressing the weapon button while focusing on a distant enemy will throw a knife instead.

Strong Attack:
- Strong Weapon Attack.
- Requires Long Sword weapon.

- Press and hold weapon button while in combat.
- Executes a slower but more powerful weapon Attack.

Grab:
- Unblockable Attack.
- Grabs focused enemy if they are within range.
- Can select a direction to throw the enemy towards with the Right Analog Stick.

Step:
- Allows the player to reposition during combat.
- Quickly execute a move towards the desired direction.
- Allows quick repositioning for other offensive actions to be performed.

Defense Break:
- Breaks an enemy's defensive guard momentarily.
- Executed by quickly doing a step move followed by an attack move.

Combo Kill:
- Follow up attack to an Attack or Strong Attack.
- Executed by timing a second attack command when the initial attack connects with an enemy.
- Allows the player to strike at two different enemies in quick succession.

Defensive Stance:
- Can be activated by the player by pressing RT/RMB before performing an action.
- Can perform different defensive combat maneuvers
    - Abilities slightly vary based on equipped weapon.
    - Animations and speed of execution vary based on equipped weapon.

Parry Mode:
- Active as long as the player holds the Defensive Stance button.
- Automatically parry any attack coming from the character's front.

Counter Attack:
- Instantly kill attacking enemies by parrying their initial attack followed by a deadly attack of your own.
- Activated by holding the Defensive Stance button and attacking just when the enemy attack is parried.
- Failed timing opens up player to attacks from other enemies.
- Player does not get attacked while performing a successful Counter Attack.

Counter Grab:
- Used to stop an enemy attempting to perform a Grab on the player.
- Activated by holding the Defensive Stance button and performing a Grab just as an enemy is trying to Grab the player.

Dodge:
- Allows the player to avoid an incoming enemy attack by holding the Defensive Stance button and executing a step move.
- Quickly execute a move towards the desired direction, also avoiding an incoming attack.

Special Combat Moves (Assassinations):

Ground Assassinations:
- Can instantly kill enemies that are unaware of your presence.
- Requires Hidden Blade weapon to be equipped.
- Performing an attack on an unaware enemy instantly kills the target.
    - Performing an assassination in Low Profile does not immediately alert other enemies.
    - Performing an assassination in High Profile automatically alerts any nearby enemies and activates Combat Mode.
- Can be executed during combat on enemies that have let their guard down or are taunting the player.

Aerial assassinations:
- Can instantly kill enemies that are at a lower height than the player and within a certain range.
- Aerial assassinations automatically alert any nearby enemies and activate Combat Mode.

Enemy behavior overview:

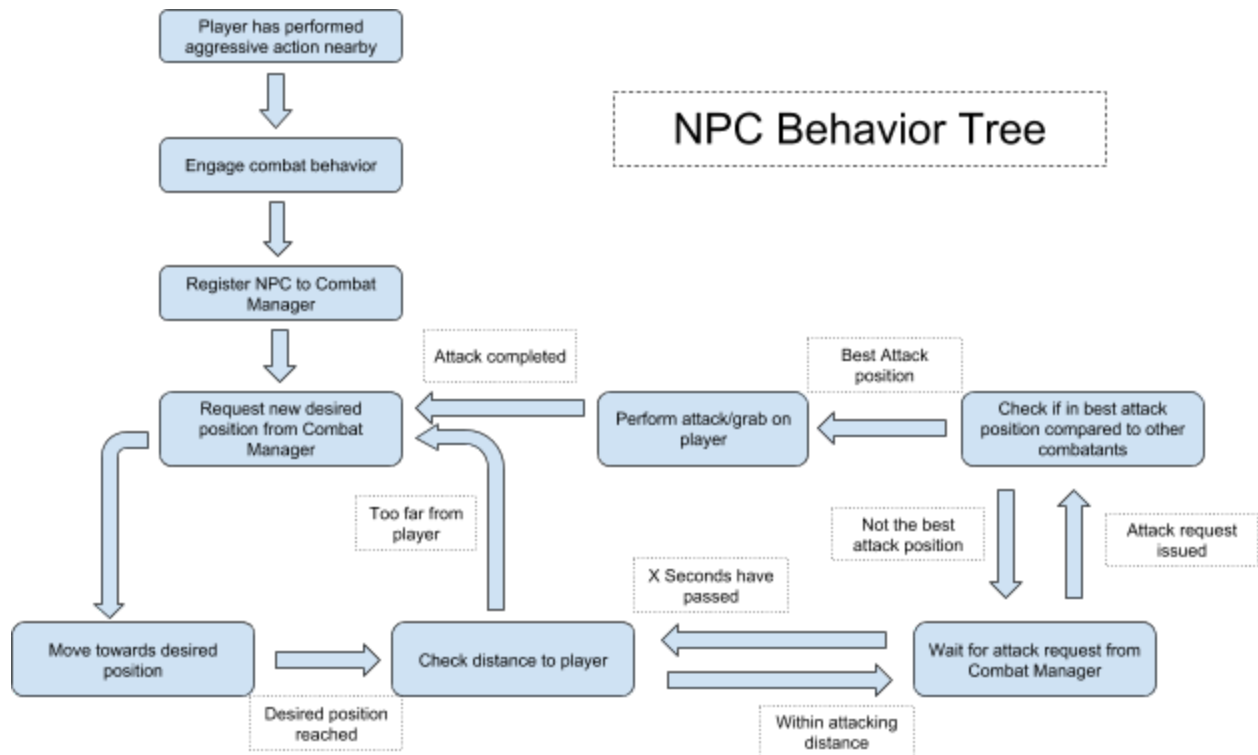## Combat Manager Behavior Tree

```
Player has performed
aggressive action  ──▶  Activate Combat Manager
                              │
                              ▼
                        Alert All Nearby NPCs
                              │
                              ▼
Register new NPC to  ◀──  Wait for NPCs to
Combat Manager            register as combatants
                              │
                              ▼
                        Main Combat Loop  ◀──  Reset Attack Interval Timers
```

Check Status of registered NPCs

Check Status of Player

Calculate desired fighting position for NPC

NPC was attacked by player

Check if player exposed

Offensive Stance / Player Exposed

Offensive Stance Attack Interval Timer Elapsed

Defensive Stance / Player Guarding

Defensive Stance Attack Interval Timer Elapsed

Issue Attack/Grab Order to NPC combatants

Combat Manager:
- Upon entering combat with the player, any enemy combatant registers themselves to a centralized Combat Manager that coordinates all actions performed in combat by NPC participants.
- The Combat Manager analyzes player position and player actions.
- The Combat Manager would assign desired movement positions to all NPCs participating in the fight.
- The Combat Manager would issue attack orders to all NPCs participating in the fight, effectively controlling the pace of combat.

NPC Behavior Tree

```
Player has performed
aggressive action nearby
        |
        v
Engage combat behavior
        |
        v
Register NPC to Combat
Manager
        |
        v
Request new desired  <-- Attack completed -- Perform attack/grab on  <-- Best Attack -- Check if in best attack
position from Combat                          player                      position     position compared to other
Manager                                                                                 combatants
   |                                                                                         ^        ^
   |          Too far from                              Not the best                        |        |
   |          player                                    attack position                Attack request issued
   v                                                                                         |
Move towards desired --> Check distance to player <-- X Seconds have passed -- Wait for attack request from
position                                          -- Within attacking distance --> Combat Manager
        Desired position reached
```

Controlling Enemy Movement:
- Enemies attempt to maintain an ideal combat distance from the player.
- Enemies attempt to surround the player.
- Enemies attempt to maintain a minimum distance from one another.

Controlling Enemy Attack Orders:
- Enemies attack the player at fixed intervals.
    - Intervals and attack types vary according to enemy archetype.
- Enemies do not attack a player that is already attacked by another enemy.
- Enemies attack the player at different intervals depending on player actions.
    - Enemies will attack a player in an Offensive Stance more often than one in a Defensive Stance.
    - Enemies will attack a player that has struck or killed an allied combatant recently.
- Enemies will attack a player that has lost their ability to defend themselves.
    - Player can be left defenseless by failing to Counter Attack.
    - Player can be left defenseless by attempting to perform a strong attack.
    - Player can be left defenseless by failing a regular attack on an enemy.

Animation Overview:

<u>Instant response:</u>
- Player input needs to be translated to action very quickly for all combat moves.
- Animations are broken down into discrete pieces that can be blended and interrupted at certain times for both the player and the NPCs.

Animation Intro	Main Animation / Interruptible	Animation Outro
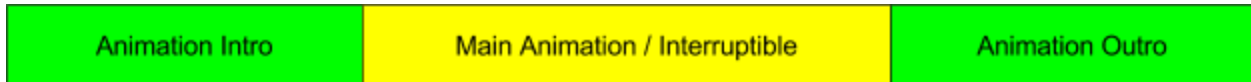
<u>Creating Variation:</u>
- Animations for each combat move are different depending on the equipped weapon.
- Animations for each combat move need to adapt to positioning and orientation of both attacker and target.
    - Adapting to position and orientation is achieved by allowing body reorientation and slight displacement during the animation intro phase.

<u>Animations and timing:</u>
- Transitions and blending need to be accessible between all available combat moves and impact animations.
    - Impact animations are achieved by smooth blending during the attack animation Outro Phase.
- Interruptible animations have additional blending and transitions available.
    - An Interruptible animation needs to allow for smooth transitions and blending to one or more separate animations during the Main Animation / Interruptible Phase.