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FIT Person Shooter

Multimodal Interfaces

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IDEA

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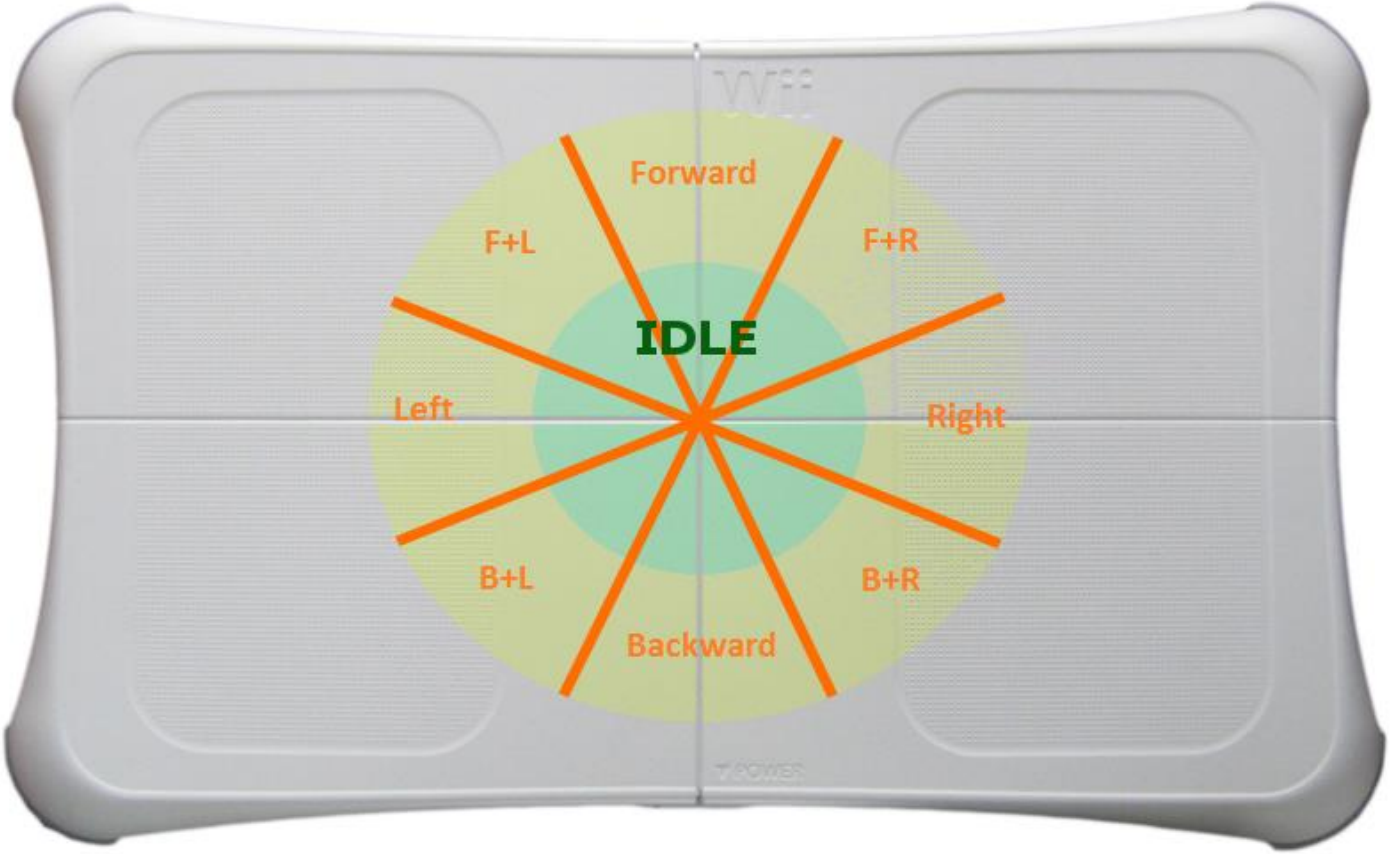
- Using the **Wii Balance Board** to control the movements in a First Person Shooter

- Able to detect the center of gravity
- Widely available. Affordable.
- Device not seen in course

- Simulate a **joystick** with the **center of gravity**

CENTER OF GRAVITY TO JOYSTICK

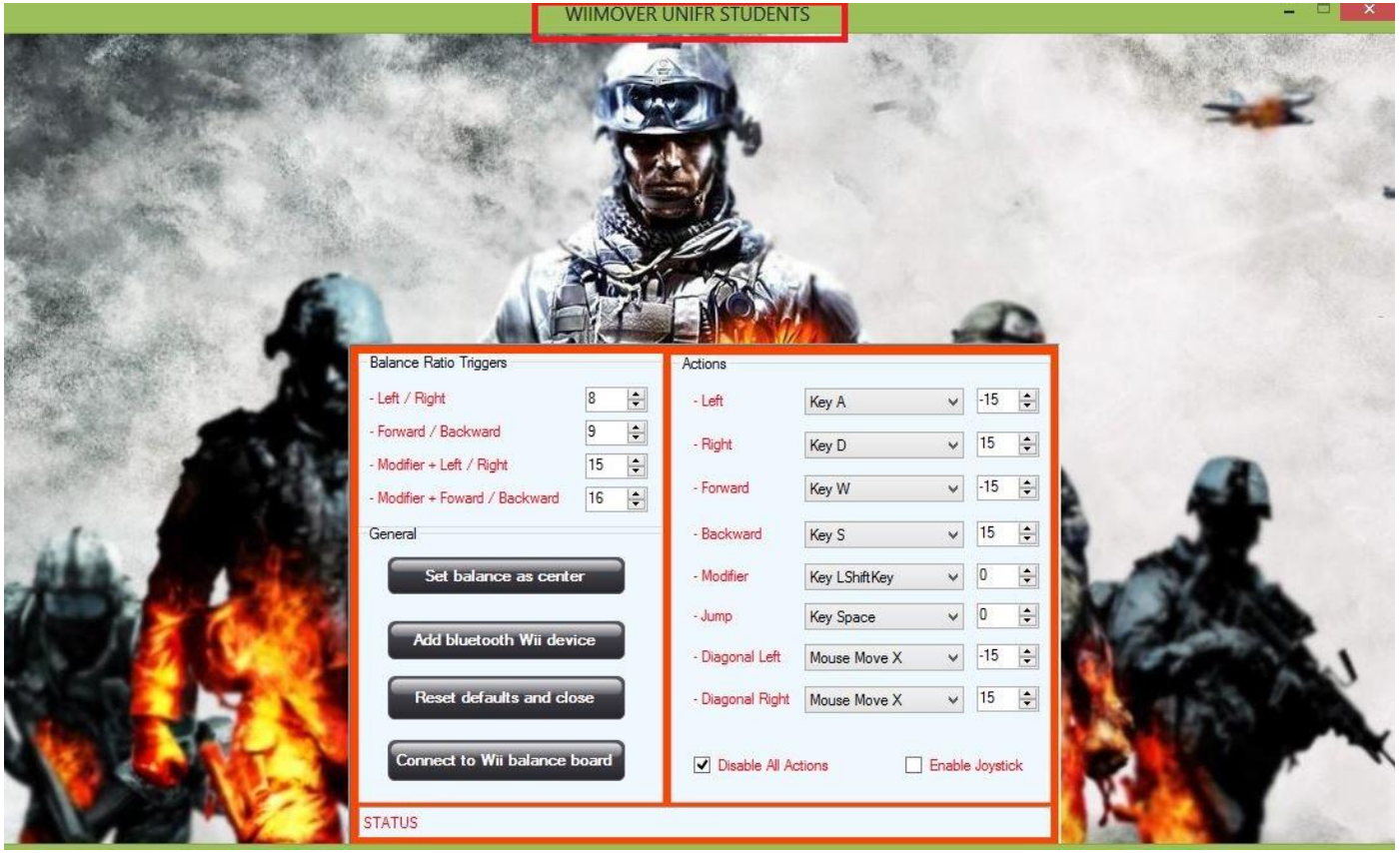


- + Jump…

IMPLEMENTATION

WiiMover

- Program we developed to pair the Wii Balance Board with the game



WiiMover

- Visual C# 2010 Express Edition
- WIIMOVER(Wii Balance Board as input device for PC).
- WIIMOVER Applications divided to three parts:

1. **Wii Device** used for Game Interaction and detects the body movements (gesture recognition) such as rotation, direction , acceleration).

2. **Bluetooth** support Device and easy access the desktop system.

3. **VJoy Virtual Driver** settings allow translate keyboard input to Joystick for Set the Left, Right, Forward, Backward , jump

COMBINATION

HEAD MOVEMENT

- Now, we can move our avatar with the Balance. (first Joystick)
- But we need **two joysticks** to play a FPS…

- **Combine** the Wii Balance Board with another device:

OCULUS RIFT

or

SMART TABLET

CASE / CARE

SYNERGISTIC

- The Task is parallel.
- The player must use both to perform the movement.

COMPLEMENTARY

- The player cannot use individually one modality.
- When he moves, he must look at where he wants to move.

THE GAME

MIRROR'S EDGE

- Gameplay based on movement (runs, jumps, platforms)
- Bright colors (great for Oculus Rift)
- Well known
- Time trials

EVALUATION

THE TESTERS

6 PEOPLE

- Familiar with games
- Already heard about Wii Balance Board, Oculus Rift or Mirror's Edge

WHAT TO TEST?

- We want to see if they prefer our modalities to their classic controller or keyboard/mouse

THE TESTS

PHASE	TIME	GROUP 1	GROUP 2
Warming	5	Balance + Oculus Rift	Balance + Tablet
Trial 1	3	Balance + Oculus Rift	Balance + Tablet
Trial 2	2	Balance + Oculus Rift	Balance + Tablet
Warming	2	Balance + Tablet	Balance + Oculus Rift
Trial 1	3	Balance + Tablet	Balance + Oculus Rift
Trial 2	2	Balance + Tablet	Balance + Oculus Rift

THE TRIALS

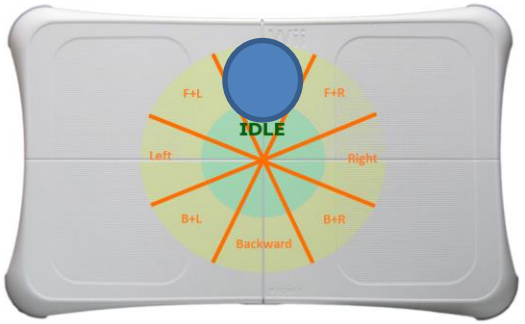
1. THE PARKOUR: The reactivity test

- Can the player move fast?
- Can he **react** fast?
- Is he able to perform **standard moves**: Pivot, Run, Jump?
- Is he able to get where he wants?

THE TRIALS

2. THE PIPE: The precision test

- Is the player able to maintain his center of gravity in the an area?
- Is he able to keep the avatar's head straight?



RESULTS

THE T-TEST

Our initial hypothesis

We assume that there is no significant difference between both combinations. (the probability is 95%)

THE RESULTS

Balance + Oculus Rift

	Jump: Number of attempts Max 10	Parkour: Time in seconds	Pipe: Number of attempts (max 15)
User 1	5	74	4
User 2	Fail	98	Fail
User 3	4	83	13
User 4	4	112	Fail
User 5	6	80	10
User 6	Fail	107	Fail

Balance + Tablet

	Jump: Number of attempts Max 10	Parkour: Time	Pipe: Number of attempts (max 15)
User 1	5	70	5
User 2	5	80	9
User 3	3	81	11
User 4	6	95	8
User 5	Fail	89	Fail
User 6	9	77	Fail

THE RESULTS

- Value of p: 0.064.
- Our null hypothesis is accepted -> There **no significant** difference between both combinations.

- The results of the combination of Balance + Tablet are **slightly** better.

FEEDBACK

- Enthusiastic to use the Wii Balance Board in a FPS -> Great Idea
- Impressed by the Oculus Rift

- None of them felt better in the game with our modalities than with a controller

- But they would likely use our modalities to play other FPS which doesn't require too much precision on movement
- Better experience, better immersion (especially with OR)

CONCLUSION

THE CONCLUSION

- We proposed an innovative use of the **Wii Balance Board**.
- The movements of the player look like his avatar's movements -> **Better immersion**

- The Oculus Rift has much potential, but the players can suffer from **motion sickness.**
- The Smart Tablet is rather **precise**, but doesn't free the player's hands.

- There are still some work to make the Balance more precise.

THE VIDEO

Thank you for your attention.

QUESTIONS

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