XR SwitchCar User Manual

By Stefan Botnari

DOOR STUDENTEN VAN THOMAS MORE

1. About the project

This game is designed for young children with motor and/or intellectual disability and is intended to be used with a Meta VR headset. While it may work on other headsets, the full experience is optimized for the Meta Quest series.

The goal of the game is to learn the principle of action/reaction and to support motor skill development in a playful, pressure-free way. Children interact with both real-world objects, like buttons and a table, and virtual objects, like a car. They are stimulated to manipulate the buttons and the car and learn through simple actions that their behavior immediately evokes a predictable reaction from the environment. The game offers two different levels, so therapists can choose the level of difficulty that best fits each child.

1.1 Level 1: Guided Track Play

This level is designed for children who are just starting motor skill training.

When the game starts, the headset scans the room and looks for a table. If a table is found, the game automatically creates a driving track around it, adapted to the size of the real table in front of the child. This helps bridge the gap between the virtual and physical world and makes the experience easier to understand.

A small car is placed at the start of the track. When the child presses a button, the car begins driving along the track in a continuous loop. This simple interaction is meant to teach cause and effect, helping the child understand that their actions lead to visible results.

To keep the experience engaging and playful, several optional features are included:

- The child can honk the car's horn
- Different cars can be selected
- The car can be physically picked up, moved, or thrown
- The driving track can be hidden if visual simplicity is needed

This level focuses on building confidence, basic hand movement, and understanding simple interactions in a safe and controlled environment.

1.2 Level 2: Free Movement and Exploration

This level is designed for children who are ready for a slightly more advanced challenge.

Instead of a guided track, the game creates a grid on top of the detected table. Each grid tile represents a possible spawn point for a car or an object. When the game starts, a set number of objects and one car are placed on the table within these allowed positions.

In this level, the car is no longer restricted to a track. The child can freely move the car around the table by pushing the buttons or grabbing the car with his hand, exploring the space, and interacting with virtual objects. The virtual objects can be pushed, knocked over, or repositioned by the car, encouraging more complex hand movements and spatial awareness.

This level supports:

- Free movement and exploration
- Hand eye coordination
- Understanding space and object interaction
- Gradual progression from guided play to more open play

Therapists can use this level to introduce more dynamic tasks while keeping the experience playful and intuitive.

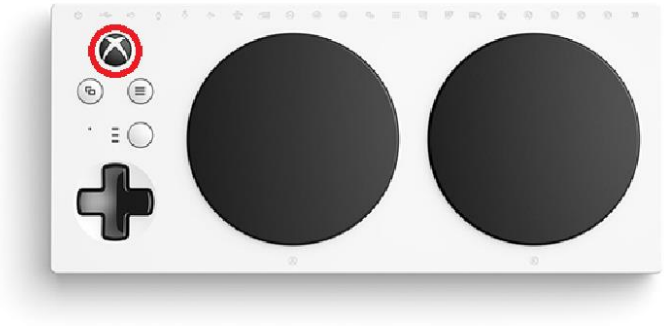
2. Button Configurations

For this game it's preferable that we use an Xbox adaptive controller; you can find an image for how it looks below.

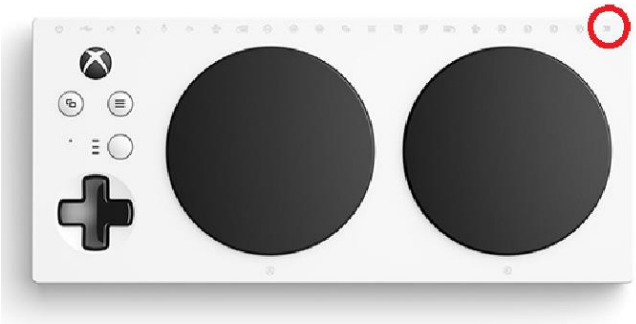
To connect it to the headset:

- First in the headset go into the settings and into the Bluetooth tab

- Second on the controller, hold the big Xbox button to turn on the controller



- Next, to pair the controller you need to hold the right most button on top, once the Xbox light starts blinking that means the controller is in pairing mode

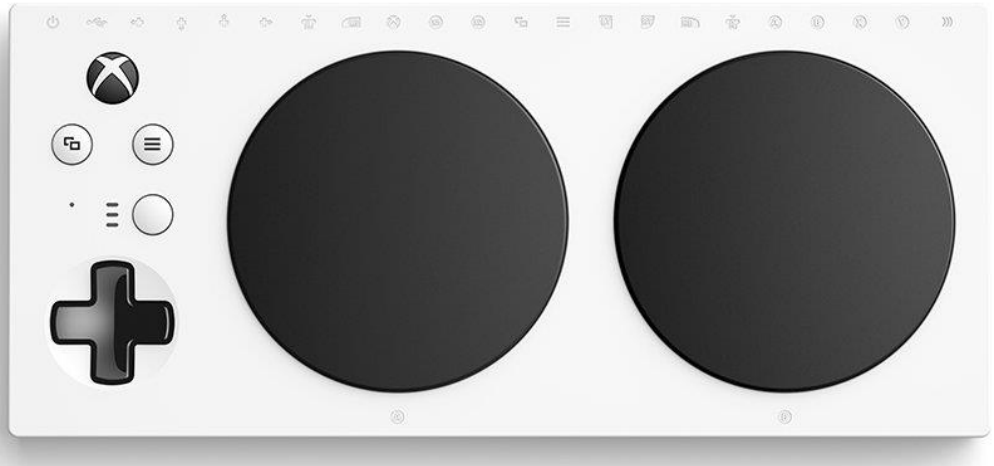


- Inside the headset you will find “Xbox wireless controller”, once clicked it will connect to the headset, the light not blinking anymore will indicate it is now paired to the headset.

Extra details:

- This game requires additional hardware to make some features playable; extra adaptive buttons are available for purchase; you can tell they are for the adaptive controller if they have a cable like a headphone jack. They can be connected on the backside of the controller to any of the buttons. Below you will find all the buttons and what they do.

2.1 Level 1

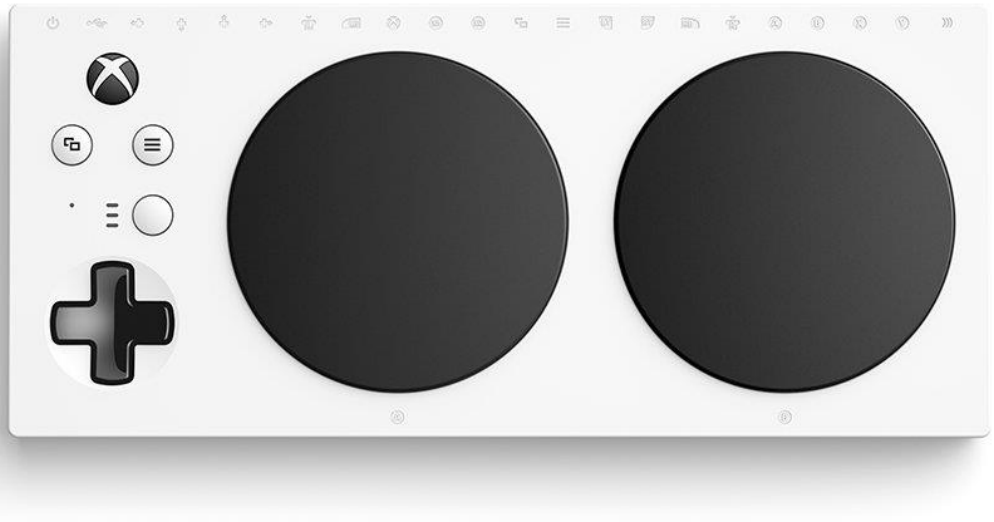


- A - Drive
- RT - Drive 10 seconds
- B - Honk

- Change car model

- Toggle road

2.2 Level 2



- Drive forwards

- Drive backwards

- Turn left

- Turn right

- Enable one button drive

- Drive (while one button drive is enabled)

- Disable crash noise

- Change car

- Honk

- Respawn objects

3. Preparing the Room Before Starting the Game

Before launching the game, it is important to set up the physical space correctly so the game can recognize the right table and work smoothly.

Set up the Guardian and physical space

Put on the Meta Quest headset and open Settings.

Make sure the Guardian system setup is complete.

Pick the room scale scan.

Follow the on-screen instructions to scan the room and define your play area.

This allows the headset to understand where the floor, walls, and furniture are located.

Review detected furniture

At the end of the setup process, you will be asked whether you want to add, edit, or rearrange furniture.

This step is important.

The headset may automatically detect multiple surfaces such as:

- Tables
- Desk
- Shelves
- Low cabinets

For this game, only one main table should be detected, so it is best to remove all the other furniture.

Remove extra furniture surfaces

If you see more than one table, shelf, or flat surface listed:

- Select the furniture item you do not want the game to use. You can do this by pointing to the item with the controller and as soon as the name of the item appears, then press the trigger button (with your index finger).
- Choose Delete or Remove.
- Repeat until only the main table you want the child to play on remains.

Extra surfaces can confuse the game and may cause objects or cars to appear in the wrong place.

Add the correct table if needed

If the table, you want to use is not detected:

- Choose Add furniture.
- Select Table.
- Adjust its size and position so it matches the real table as closely as possible.

Take your time here. A well-placed table improves the stability and accuracy of the game.

Final check

Before starting the game, make sure:

- Only one table is visible in the furniture list
- The table size roughly matches the real table
- No shelves or extra flat surfaces are left detected

Once this is done, you can safely start the game. The headset will also remember the environment for future use. So, if the room doesn’t change too much and the table is kept in the same location, you don’t have to take this step the next time you want to play the game.