How to create an endless Virtual Tunnel with flashing images

In this example scenario, images should appear in an endless tunnel on the walls. A Wheel is used as the input device. On the beginning of every trial, the recording of a microscope should be triggered.

Create a New Maze

For this experiment, load the FlashTunnel.maze file by clicking *load maze* in MazeMaster.

If you want to create your own maze, start the MazeBuilder by clicking on the button in the top panel.

The easiest way of creating an endless corridor is to set the number of pictures, which should be on the wall. This determines its length and can even be used without using any pictures in the end. This is done in the MazeBuilder in the create maze by pictures panel.

The endless maze factor sets the factor with which the length will be multiplied to give the impression of an endless maze (default = 6). After entering those values a click on the button *create endless maze* will create the corridor.

Textures

Textures for the walls can be loaded by using the buttons in the Textures section. *Background* is the texture for the maze walls. Textures for *ceiling* and *floor* can be loaded by clicking one of the buttons. The textures should be square in size.

Place a reward point somewhere in the maze, where you want to have the reward area. Normally, the area is placed after the stimulation period, which is the area of the tunnel with the light sensor barriers (red lines) (but before the last sensor, which is the teleportation sensor). Additional rewards can be created by clicking on the plus button next to the rewards on the bottom of the maze creator window.

The maze is now ready and can be named and saved.

Configure Input Device

Go to *windows→Input* devices and select *wheel*.

Set General Settings

Either create a new configuration file for your settings, or load an existing one. For this example experiment, load the task setting *endless* from the experiment *virtual tunnel*.

Set Maze settings

Open the window *windows→Maze Settings* in the top menu. Make sure, that *New Trial after Teleport* and *New Trial after Reward* are unchecked. Close the window by clicking *Save*.

Load Cues

The cues are shown in the cues section on the left side. Ten cues can be loaded in total to show on the maze walls. A new cue can be loaded by clicking on the image/placeholder of the cue. An already loaded cue is replaced with the new one. You can delete cues by right-clicking on the cue image.

All loaded cues can be saved as a set of cues, which can be loaded afterwards. For this, use the *Load Cue Set* and *Save Cue Set* buttons.

For this example experiment, you can load the set, which is placed in the example folder.

Cues can be shown in two different modes: Flashed or as texture on the wall. When the flashed mode is used, the images will be flashed on the walls at the sensor positions for a certain duration, which can be set here as well. Check *Flash Cues* and uncheck *Cues on Walls.*

The sensors positions are normally automatically created from the Maze Builder, so that the images are distributed throughout the length of the corridor. The cues are flashed from left to right/ascending order, which mean, that the cue number zero will always be the first one. The number of cues should match the number of sensors, but ignoring the sensor number zero (teleportation sensor). That means there should be one more sensor than cues.

Load a cue for each sensor you have in your endless tunnel, which is the same number you entered before when creating the maze in the maze builder. If there are more cues left, delete them by right-clicking on them.

Select the Flash cues checkbutton and deselect the cues on walls checkbutton.

In this case we want the cues to stay on the wall, once they are flashed. For this, just enter a high number of time in the flash duration panel (e.g. 100 sec). This should be done already by loading the pre-set of settings.

Trial Control Settings

The settings should be adjusted automatically by loading the pre-settings.

Disable the tracking mode, since the position of the wheel is saved separately. Set Trigger A to start of trial. This trigger represents the digital trigger for the microscope. If this is not yet set, go to *windows→settings→digital ports* and set trigger A to the correct port.

The experiment should start directly, so set the start trial to *directly*.

The reward can be enabled by clicking the enabled button in the supply reward panel. Set the duration to 0.1 sec and a reward probability of 80 %.

You can check the settings by looking at the maze info panel. Endless corridor should be set to True. The length of the corridor should match the number of cues you have loaded and the number of sensors should be your number of cues plus one. if this is correct, the experiment is now ready to be started.

Start the Server

The graphical engine is ready to start. Click on the connect button in the server control panel to automatically start the engine. The server status should change to online, after a few seconds. When this is the case, the experiment can be started by clicking the start block of trials button in the trial control panel.