Manual

Shuttle Simulations

This software allows the user to create an assembly simulation. It provides an edit-mode where objects can be spawned, moved and rotated. So that a working place can be created. To create a simulation a sequence of motions can be added to a queue. The queue can then be executed and the avatar follows the instructions and shows the user how to assemble a certain product.

Prerequisites

The MOSIM-Framework is needed for the software to work. Therefore start the server before running the software.
MOSIM can be downloaded here. The version must be at least v0.1-alpha.

Install

Run the ShuttleSimulations.msi file and follow the instructions. The software will then be installed.

The main menu

After opening the project you will see the main menu.

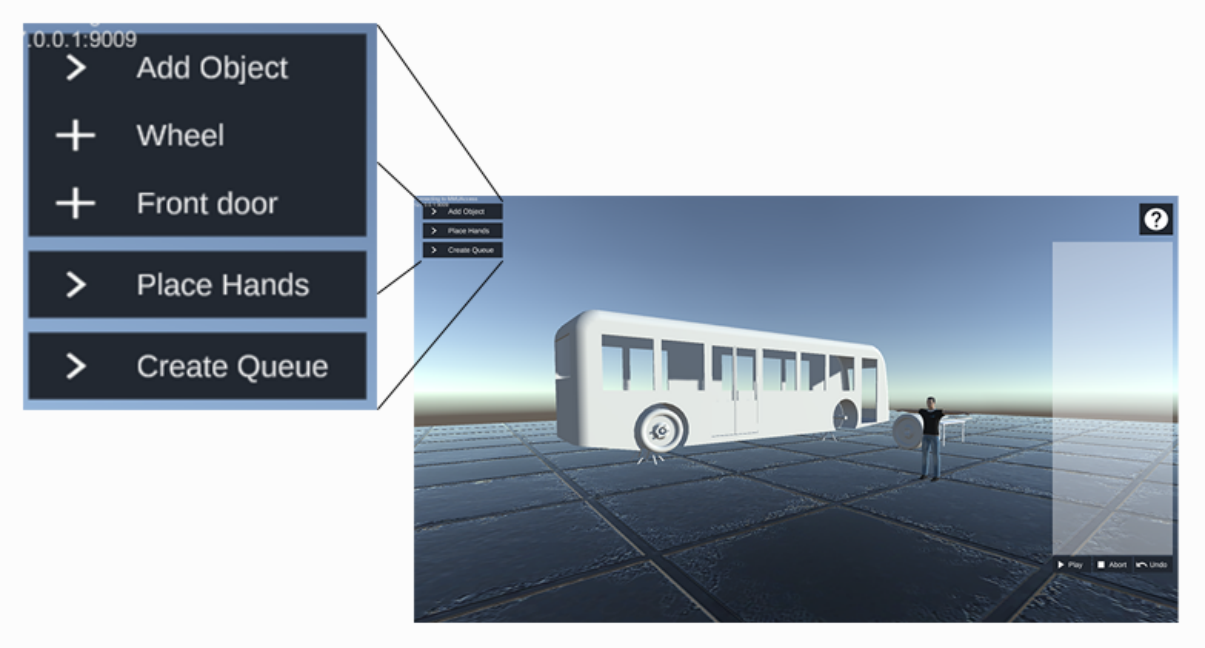
The start button starts the application.
The help button shows some help on shortcuts.

The credits button shows all the credits.
The quit button ends the program.

The editor

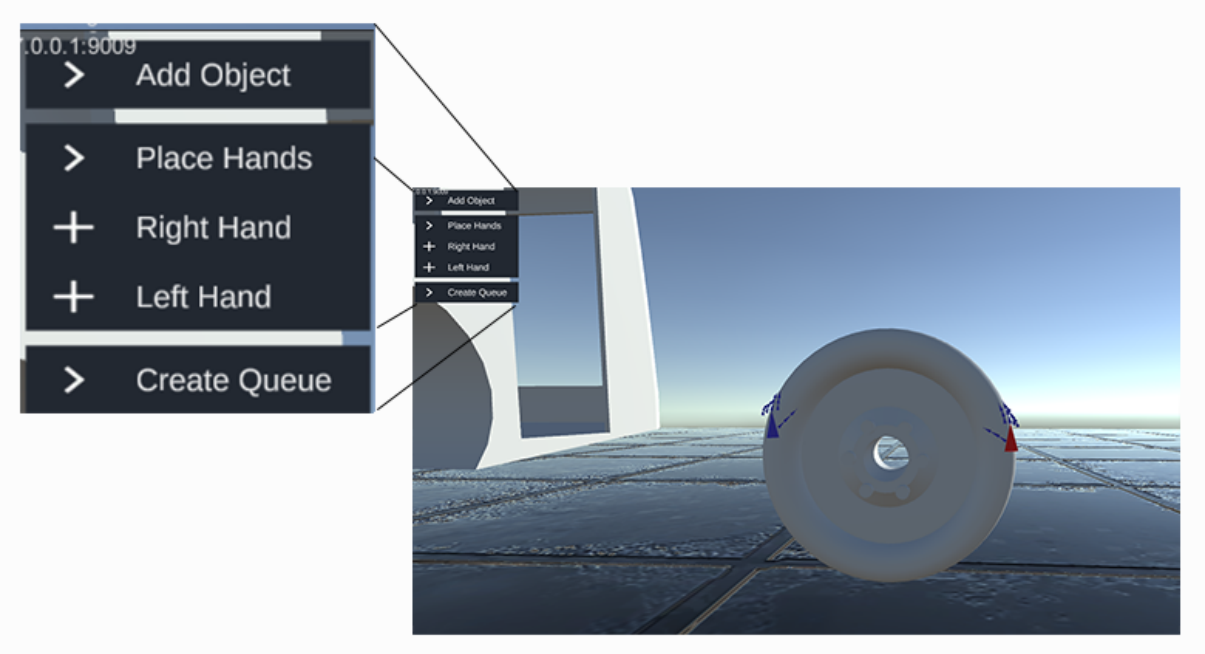
In the editor, objects can be spawned by the user. These objects can then be freely moved or rotated in the whole scene. To spawn these objects they have to be located in the Resources folder as prefabs.
Furthermore, grasping points in the form of left or right hands can be spawned on objects and individually moved or rotated.
The editor also features the creation of a queue of different interactions done by the avatar. Those are walk, reach, pickup, move and release.

Add object



With a click on the Add Object menu, a drop down menu opens that shows all spawnable objects. By clicking one of the objects it can be spawned inside the scene via a `left mouse` button click on the desired destination. It is also possible to spawn it by clicking `strg`.

Place Hands

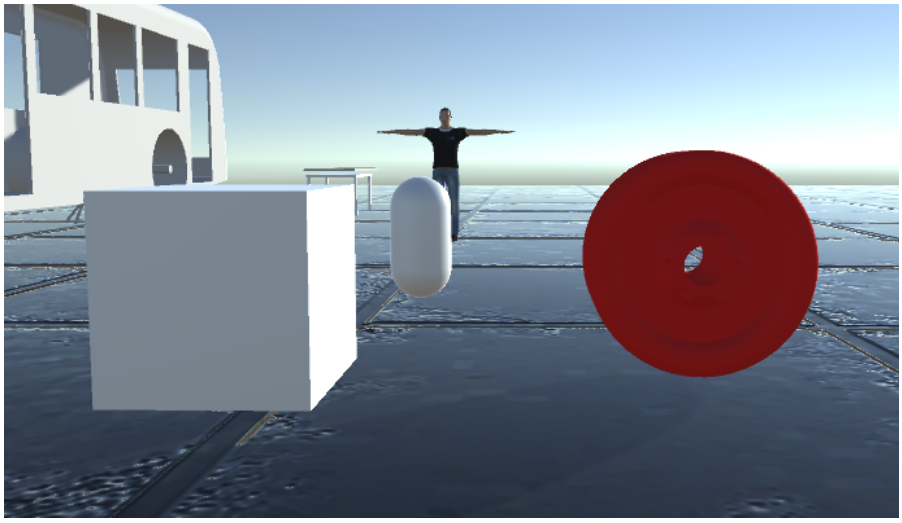


With a click on the Place Hands menu, a drop down menu opens that shows all spawnable hands. So left and right hands. By clicking one of the hands they can be spawned on a marked object via a `left mouse` button click on the desired destination.

It is important to know that an object can only have one right hand and one left hand assigned to itself.

Mark and move objects

Objects can be marked via pressing `strg + left mouse` button click on the desired object. Marked objects are highlighted in a red color.



When an object is marked it can then be moved with pressing the `M` button on the keyboard. While `M` is pressed, the object will follow the mouse position.

To rotate an marked object the desired axis has to be pressed. Meaning if the user wants to rotate the object around the x-axis the `X` button has to be pressed . The object will then rotate correlating to the mouse movement. This of course also works with `Y` and `Z`.

If an object is marked the following buttons will show in the bottom left of the screen.

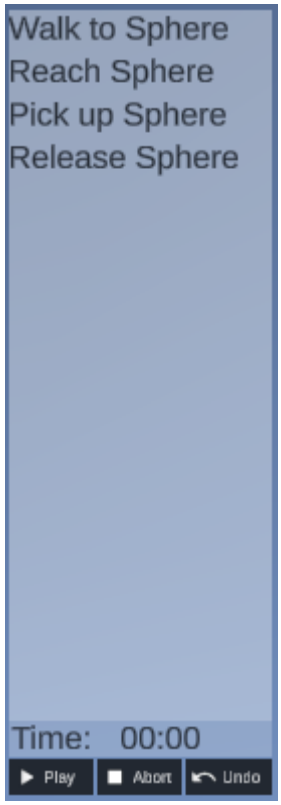
- The remove button simply removes the marked object.
- The Create Walktarget button spawns a walk target for the marked object to make it possible to walk with the avatar to that certain object.
- The Create Movetarget button spawns a move target for the marked object. This comes in handy when the object should be moved. Therefore, it is then moved to the position of the move target.

Create Queue

With a click on the Create Queue menu, a drop down menu opens that shows all possible instructions.

- **Walk:** Instruction to let the avatar walk to a desired object. The desired object needs a walk target.
- **Reach:** Instruction to let the avatar reach to a desired object. In fact to a grasping point that is on the object. A hand on the object is required.
- **PickUp:** Instruction to let the avatar pick up an object. The instruction is only possible after a reach instruction.
- **Move:** Instruction to let the avatar move an object to its move target. Therefore, of course a move target ís needed.
- **Release:** Instruction to let the avatar release the object after moving.

By clicking them they are then placed inside the queue window:



- **Play:** Starts the Simulation
- **Abort:** Aborts the simulation
- **Undo:** Deletes the last entry of the queue
- **Timer:** Shows how long it takes to do the simulation

The Help button

Shows the instructions that are needed inside of the editor.