



UNITY PACKAGES GUIDE

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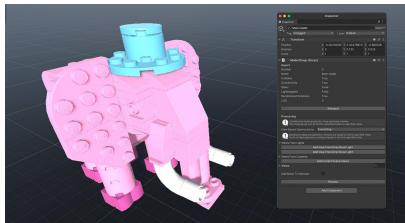


PACKAGES OVERVIEW



LEGO Materials

Shaders and Materials for official LEGO color palette



LEGO Model Importer

Import LEGO models from LDD Pro & Bricklink Studio



LEGO Minifigure

Create a LEGO Minifigure rigged and animated



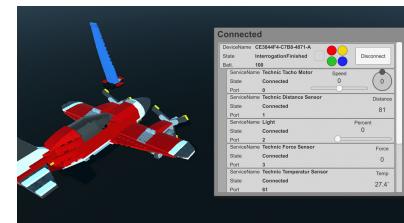
LEGO Minidoll

Create a LEGO Minidoll rigged and animated



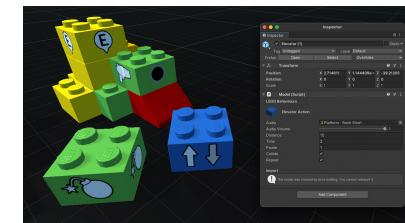
LEGO Creatures

A library of LEGO creatures rigged and animated



LEGO Wireless SDK

Communicate with LEGO Hubs, Motors and Sensors



LEGO Behaviour Brick

Add logic to LEGO models using the Behaviour Brick system

FAQ & Requirements

All Packages

Supported Unity Versions: Unity 2020.3.X LTS & 2021.1.X

Render Pipeline: Universal Render Pipeline

Editor Platform: Windows, Mac and Linux

Scripting Backend: IL2CPP & Mono

Specific to LEGO Wireless SDK

Editor Platform: Windows and Mac with Bluetooth

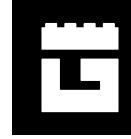
Scripting Backend: Mono



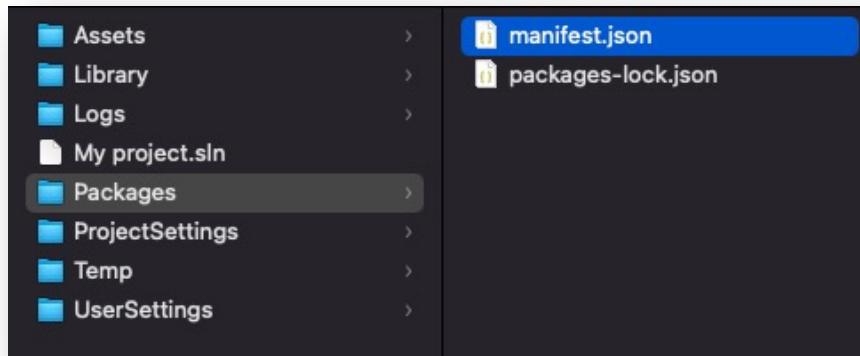


Installation Guide





1. Add LEGO Package Registry



Open Manifest file

Located in the "Packages" folder
inside your Unity Project directory

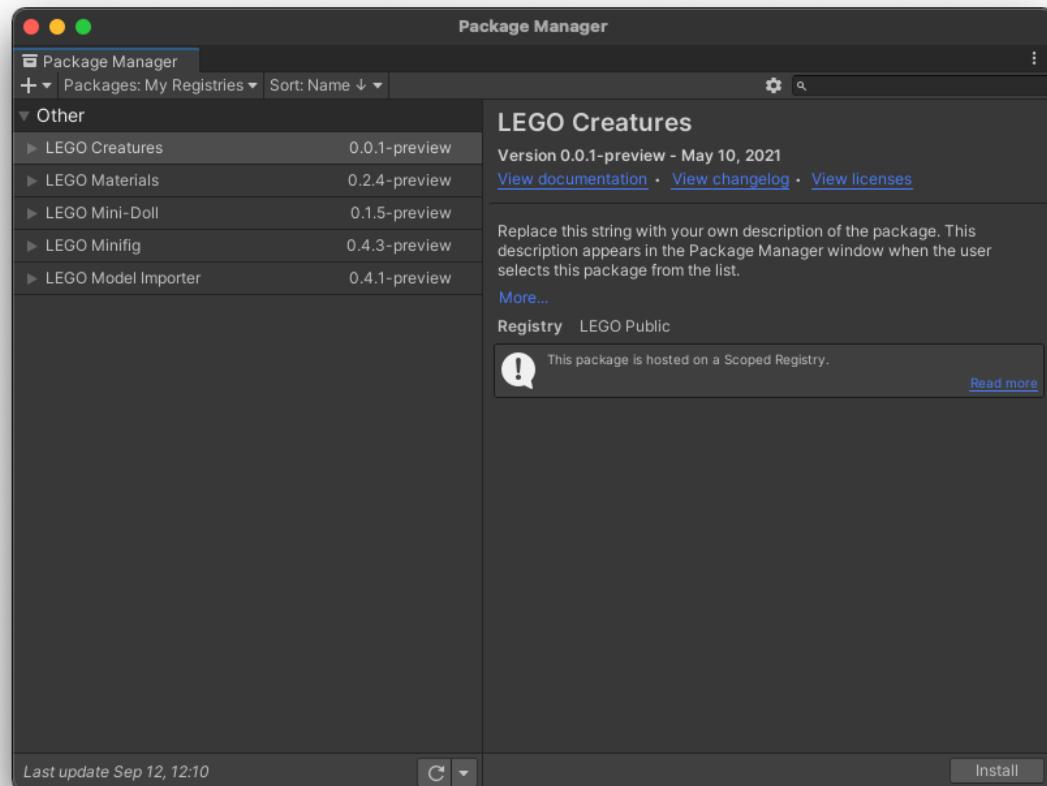
```
{
  "scopedRegistries": [
    {
      "name": "LEGO Public",
      "url": "https://upm.services.lego.com/public",
      "scopes": [
        "com.lego"
      ]
    }
  ],
  "dependencies": {
    ...
  }
}
```

Add LEGO Registry

Add the above scoped registry details



2. Install packages from Unity Editor



Open Package Manager Window

Select My Registries in the dropdown and ensure that "preview packages" are enabled in the Editor Settings

Install packages from the list. Updates to packages will be available here.





LEGO Materials: Overview

The LEGO Materials package is a prerequisite for most other LEGO Packages. It contains both shaders and materials intended to mimic the look of physical LEGO elements.

Part of the package is a Color Picker Editor Script that makes it easy to select a different official LEGO material for one or more elements.

NOTE: If you want to get the raw RGB values used, then they can be found in the "MouldingColour.cs" file.



LEGO Materials in the Editor



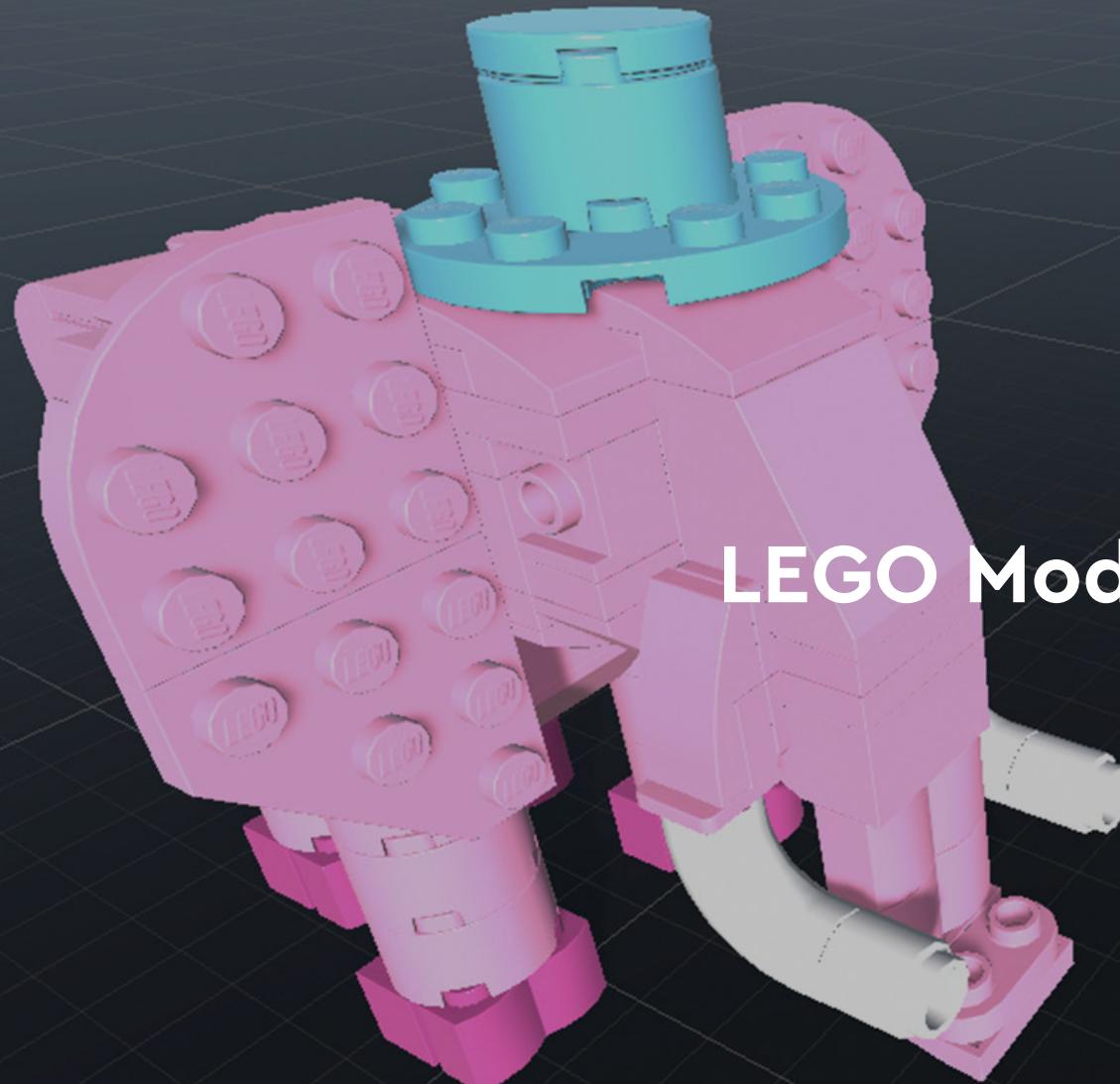
Material files

All current LEGO Materials as Unity Materials, located inside the package. IDs/names are referenced in other packages and should not be changed



Color Picker

If a GameObject has the Brick component attached, the Color Picker editor script will be available



LEGO Model Importer





LEGO Model Importer: Overview

The LEGO Model Importer makes it possible to import LEGO models designed in LDD Pro or Bricklink Studio.

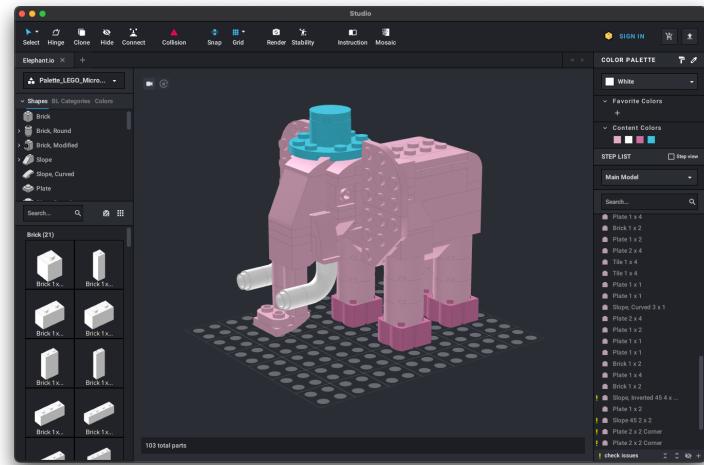
When imported, models are created as GameObjects and rendered in the scene using the built-in brick database.

Imported models can be processed and optimized to ensure best possible performance.

Models can be changed at runtime and editor-time using the built-in connectivity system.

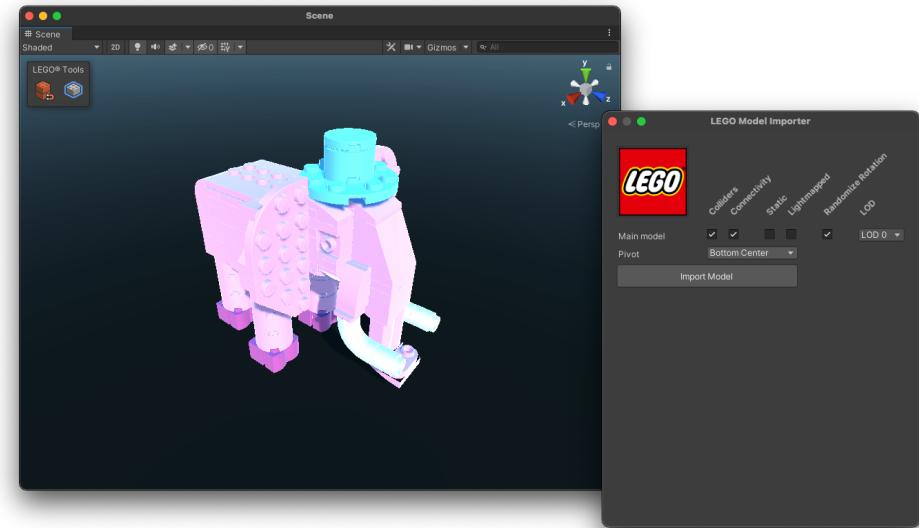


LEGO Model Importer: Import Model



Build Model (Studio or LDD Pro)

We support models built in LDD Pro (.lxf/.lxfml) and Bricklink Studio (.io/.ldr). For Bricklink Studio it is possible to select a palette file to ensure database compatibility



Import Tools (Unity)

From the LEGO Tools Menu, you can start the import process. Select the file and press "Import Model" from the dialogue popup

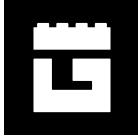
Importing Models & Database

It is important to note, that the imported file (lxf,lxfml,io or ldr) is a "recipe" file. It **does not contain any geometry** data but only a description of how the element is pieced together.

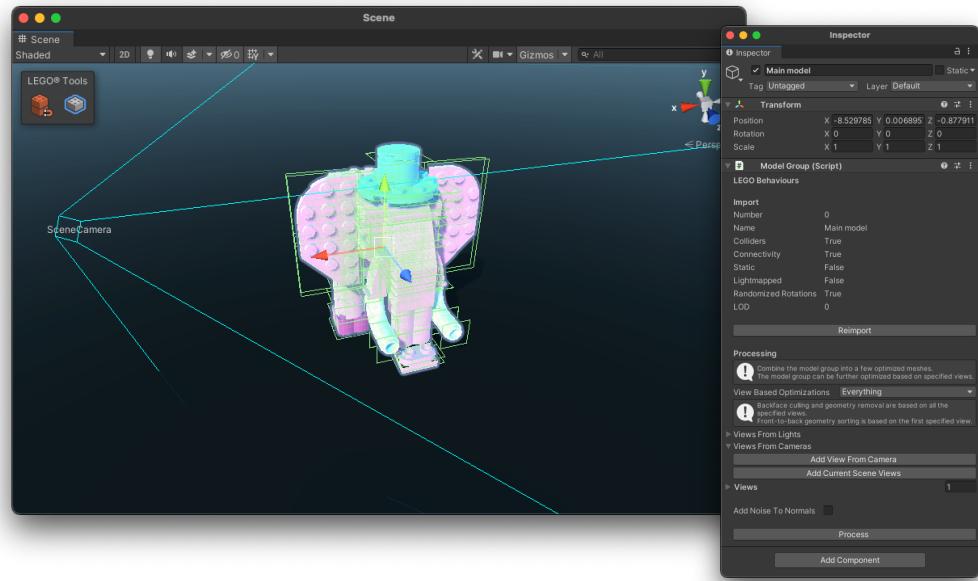
The LEGO Model Importer work with a local database that can be found as a zip called "NewParts.zip". When importing a model, fbx files from that zip file is imported into your Unity project – meaning only used elements will be imported.

If an element is not found in the import process the tool will let you know. Please contact us if elements are missing.



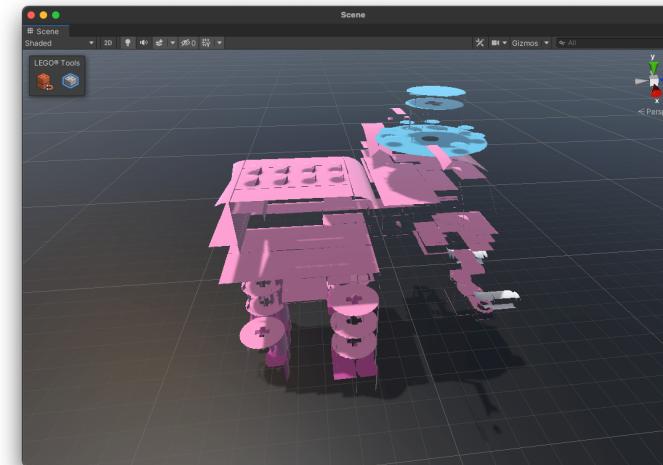


LEGO Model Importer: Optimize Model



Model Group Optimization

Selecting the Model Group object allows for optimization/processing of the model. Using the connectivity information, mesh combining and vertex color shaders

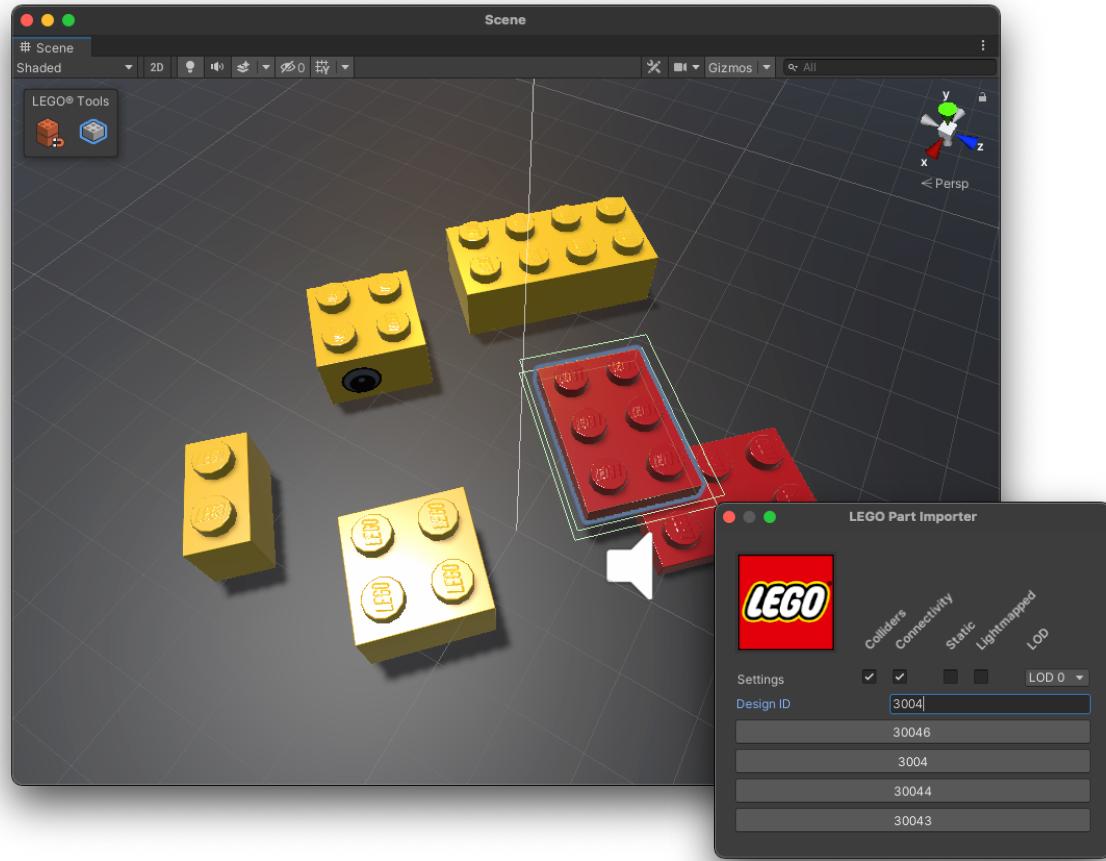


Processed Model

The processed model is now one significantly optimized mesh. Note it is no longer possible to use connectivity or explode the model into individual elements



LEGO Model Importer: Connectivity

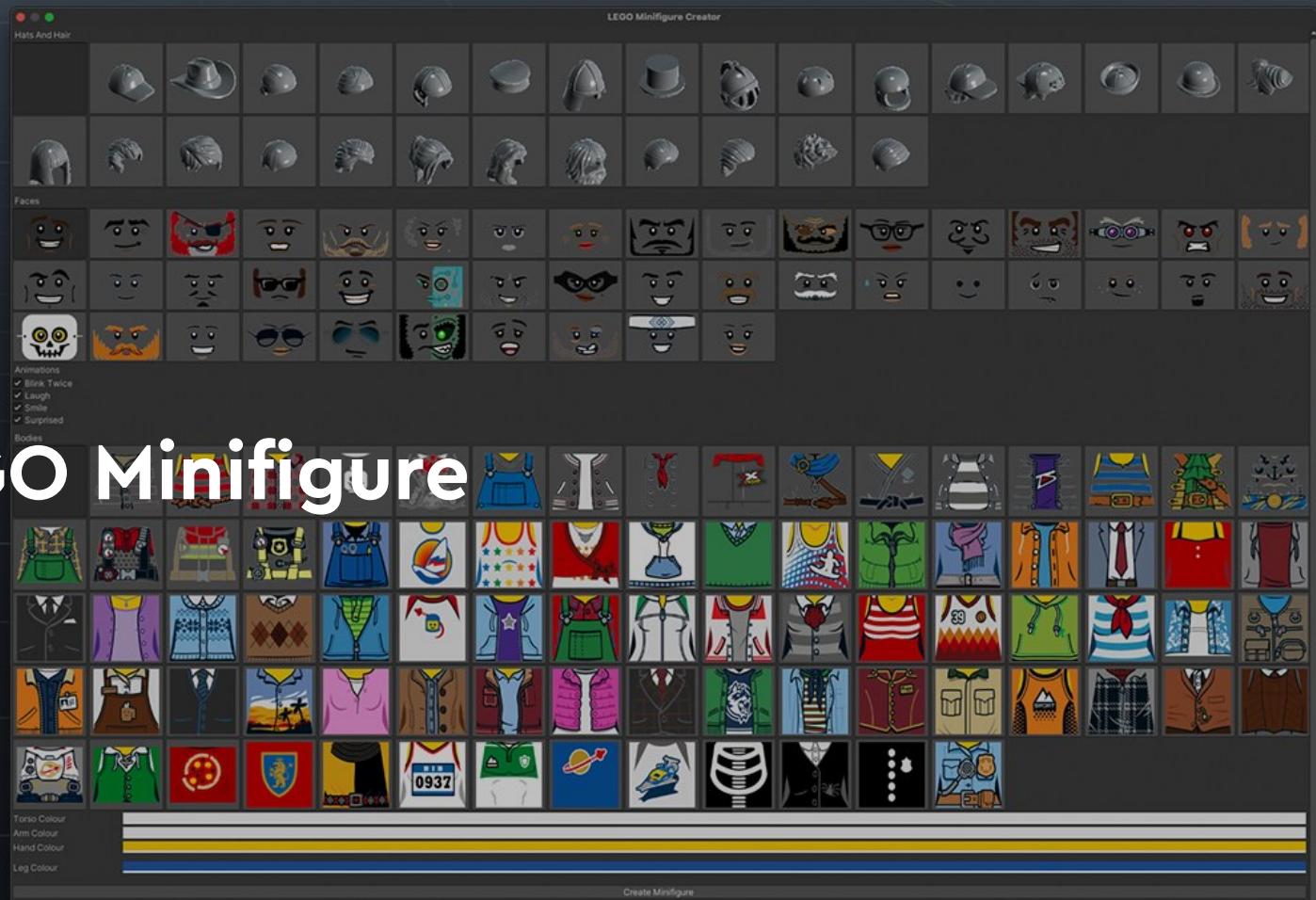


Base Connectivity System

It is possible to remove, rotate and add elements to your model inside the Unity Editor using the included Connectivity system.

The system also works at runtime and an example is included in the package, Duck Sample

If you need a part for the model, you can use the "Import Part" menu to import single part using its ID.



LEGO Minifigure



LEGO Minifigure: Overview

This package makes it possible to configure and add a Minifigure to your project.

The package contains a small dataset of Minifigure items to choose from but can be expanded (please contact).

The created Minifigure is rigged and setup using Unity's Animation Rigging system.

An Animation and Minifigure Controller is already setup, making it possible to run around with the Minifigure.

The package contains a good variety of animations for the Minifigure.

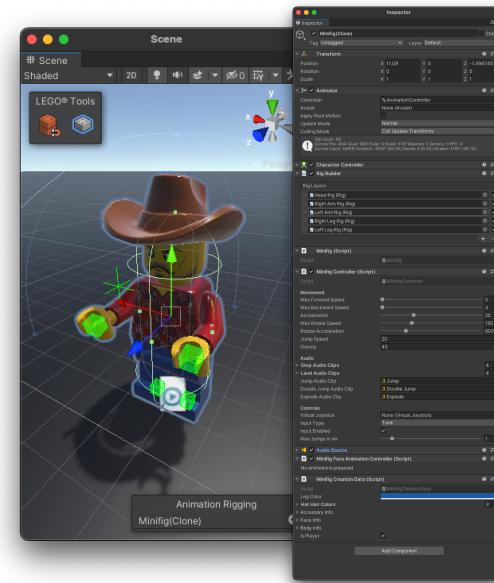


LEGO Minifigure: Create Minifigure



Create Minifigure

The included Minifigure rig supports all item types, but our creation Editor tool only support a subset. Use it to create a basic Minifigure. **Note:** More data can be added manually

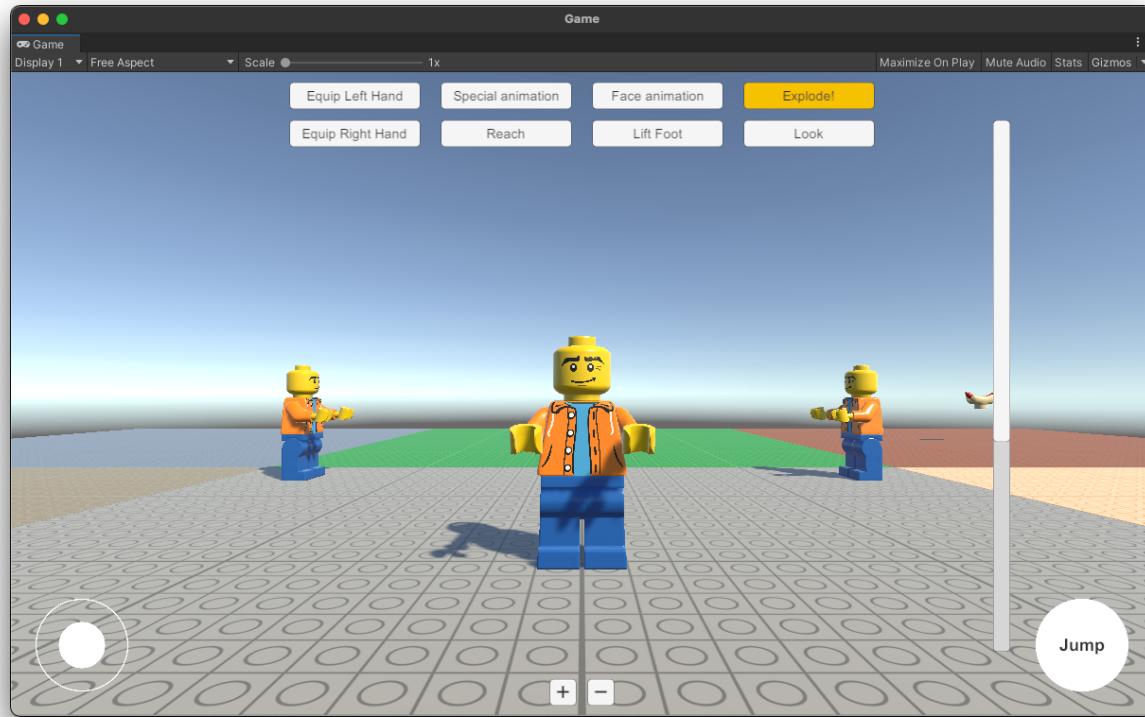


Import Tools (Unity)

The imported Minifigure is setup with Animation and Minifigure Controller and can be controlled at Play Time.



LEGO Minifigure: Sample Scene



Play with more animations and features

Included in the package is a Sample scene that can be used to explore; mobile controls, facial animations, animations and following waypoints



The LEGO Mini-Doll Creator interface is shown on the right. It features a grid of 16 hats and hairstyles at the top, followed by a row of 16 head colors. Below that is a grid of 12 faces. A sidebar on the left lists available animations: Accept, Blink, Doubtful, Laugh, Smile, Surprised, and Wink. The main area contains four rows of clothing items: a top row of 12 torso colors (pink, white, blue, yellow, orange, purple, black, grey, red), a second row of 12 arm colors (pink, white, blue, yellow, orange, purple, black, grey, red), a third row of 8 leg colors (pink, white, blue, yellow, orange, purple, black, grey), and a bottom row of 8 hip colors (white, blue, yellow, orange, purple, black, grey, red). The bottom right corner of the interface has a "Create Mini-Doll" button.

LEGO Minidoll



LEGO Minidoll: Overview

This package makes it possible to configure and add a Minidoll to your project.

The package contains a small dataset of Minidoll items to choose from but can be expanded (please contact).

The created Minidoll is rigged and setup using Unity's Animation Rigging system.

An Animation and Minidoll Controller is already setup, making it possible to run around with the Minidoll.

The package contains a good variety of animations for the Minidoll.

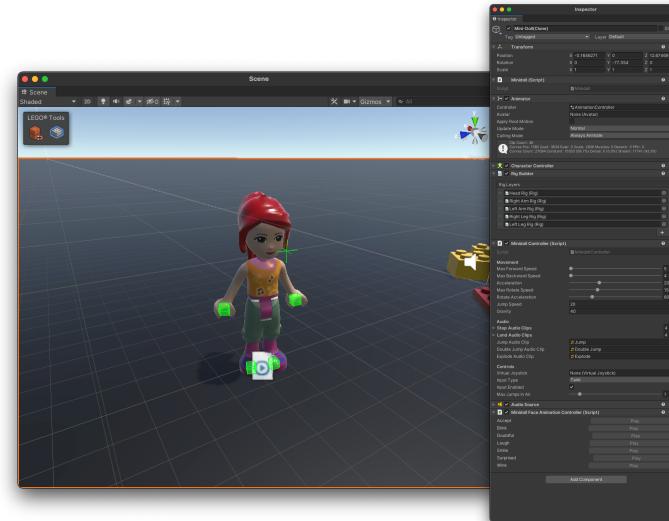


LEGO Minidoll: Create Minidoll



Create Minidoll

The included Minidoll rig supports all item types, but our creation Editor tool only support a subset. Use it to create a basic Minidoll. **Note:** More data can be added manually



Import Tools (Unity)

The imported Minidoll is setup with Animation and Minidoll Controller and can be controlled at Play Time.

Hammerhead Shark ▾

yawn

swim

fart

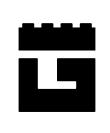
roll

bite

idle

yes

dance



LEGO Creatures





LEGO Creatures: Overview

This package contains a variety of different LEGO creatures that is rigged and animated.

The package also contains a sample scene; showcasing the different creatures and animations.



LEGO Creatures: Sample Scene



Showcase Animations

The sample scene, located in the package, showcases all creatures and available animations.



LEGO Wireless SDK

Connected

DeviceName CE3844F4-C7B8-4871-A

State InterrogationFinished

Batt. 100

ServiceName Technic Tacho Motor

State Connected

Port 0

ServiceName Technic Distance Sensor

State Connected

Port 1

ServiceName Light

State Connected

Port 2

ServiceName Technic Force Sensor

State Connected

Port 3

ServiceName Technic Temperatur Sensor

State Connected

Port 61

Disconnect



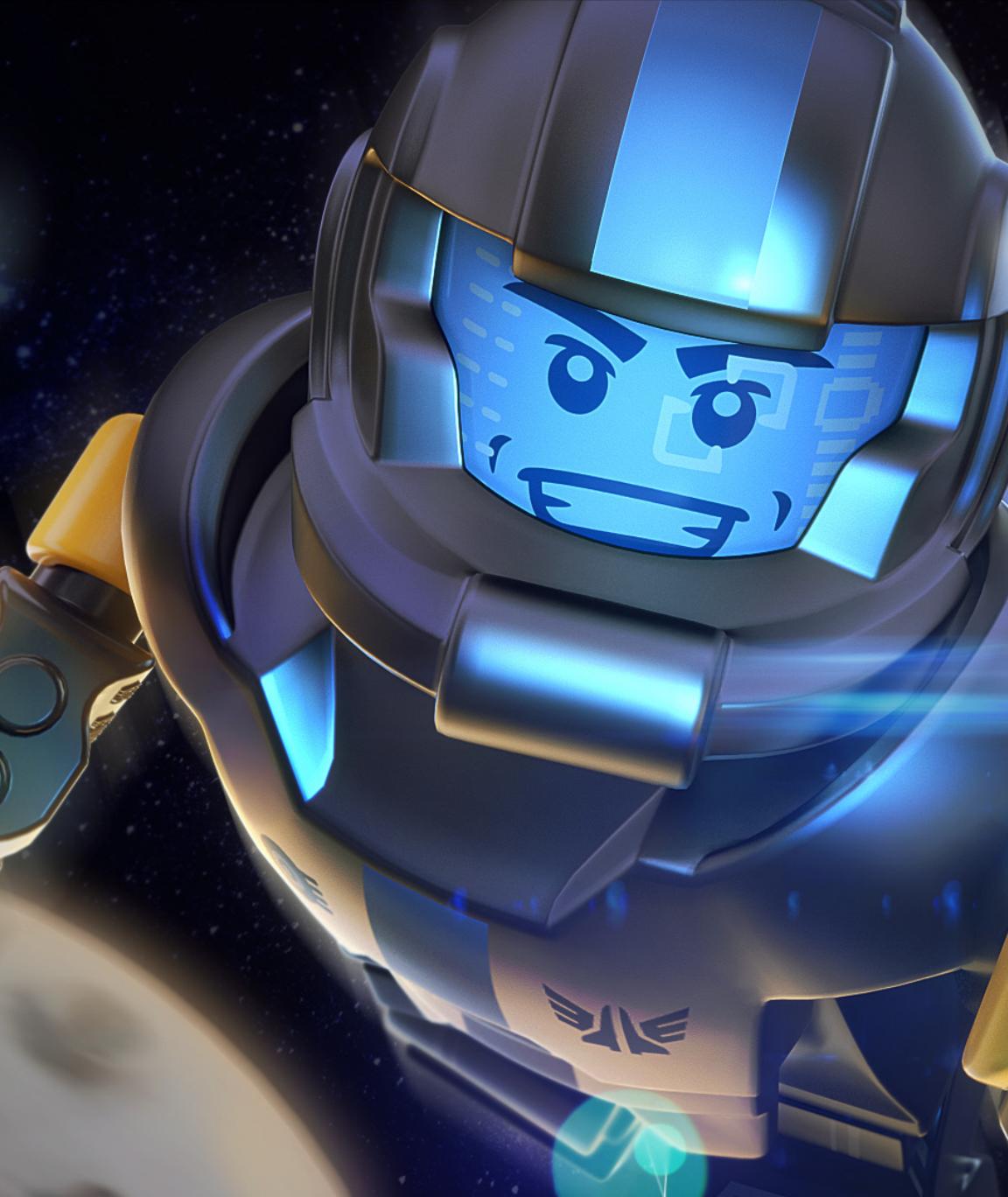
Speed 0

Distance 81

Percent 0

Force 0

Temp 27.4°



LEGO WirelessSDK: Overview

The LEGO WirelessSDK package makes it possible to control both input and output from official LEGO Hubs, Sensors and Motors.

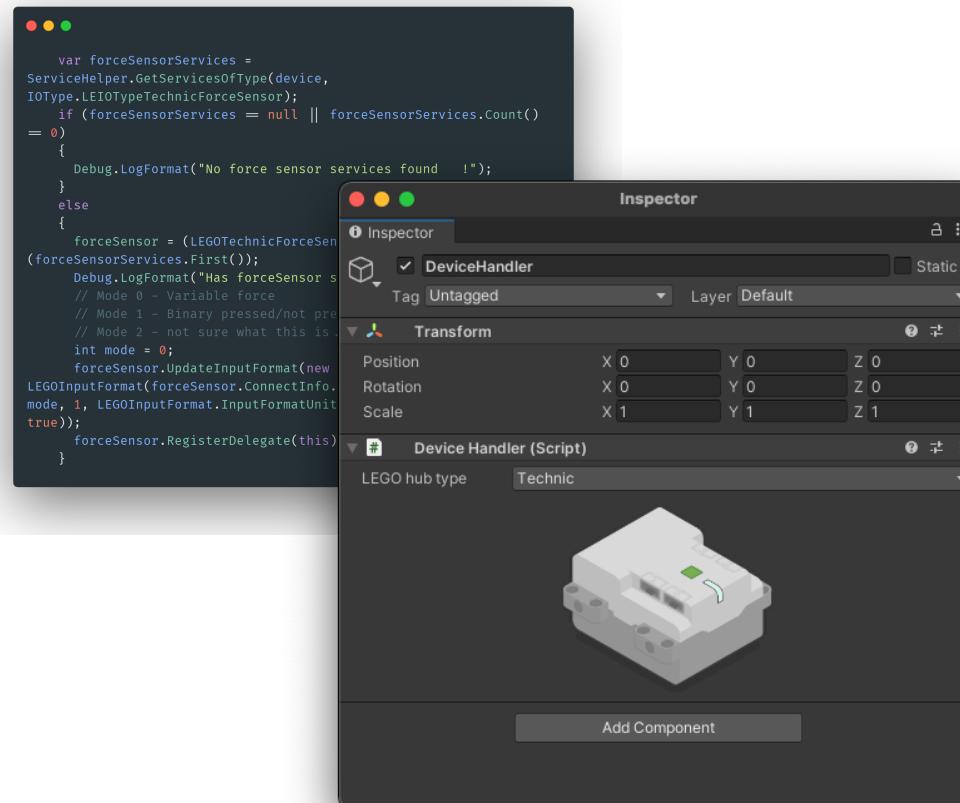
The package is highly dependent on other packages made at LEGO.

The package contains a key sample scene, Basic Discovery Example, making it possible to see all devices connected to the Unity Editor.

It is possible to build your project for; Mac, Windows, iOS and Android.



LEGO WirelessSDK: Getting Started



DeviceHandler

To get up and running it is recommended to look at the sample projects.

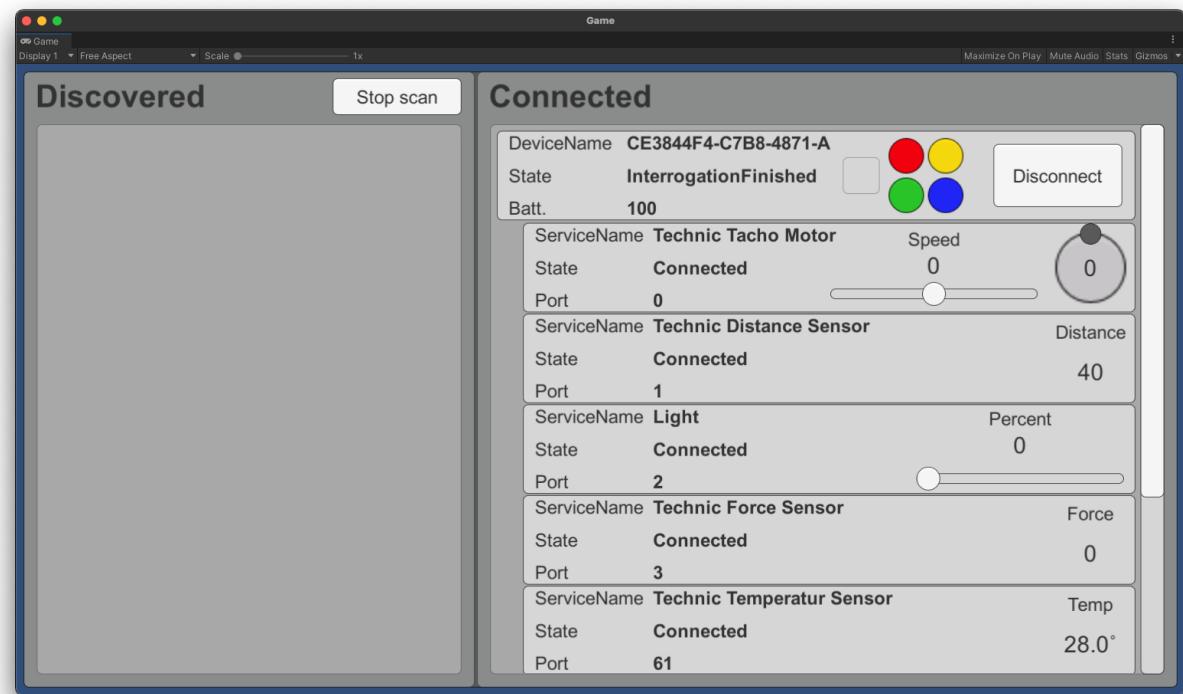
The essential component is the DeviceHandler that must exist in the scene.

The Joystick Example shows how to interface with the motors, both receiving input but also providing output to the motors.

REMEMBER: Enable Bluetooth on your machine and builds might require to be run as administrator



LEGO WirelessSDK: BasicDiscovery



Test what is connected

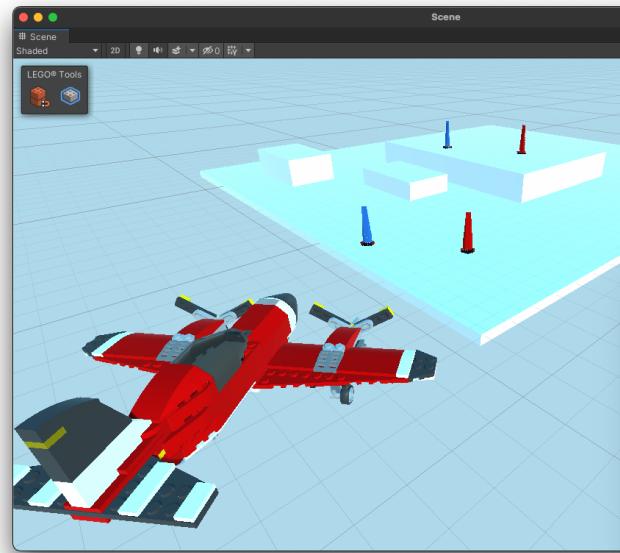
The BasicDiscovery example scene is a great entry point to check how everything works. It can connect to your Hub and show all motors and sensors connected to the Hub.

It is possible to both read input and provide output.

NOTE: From the menu bar, ensure BLE connection is set to Real



LEGO WirelessSDK: Joystick



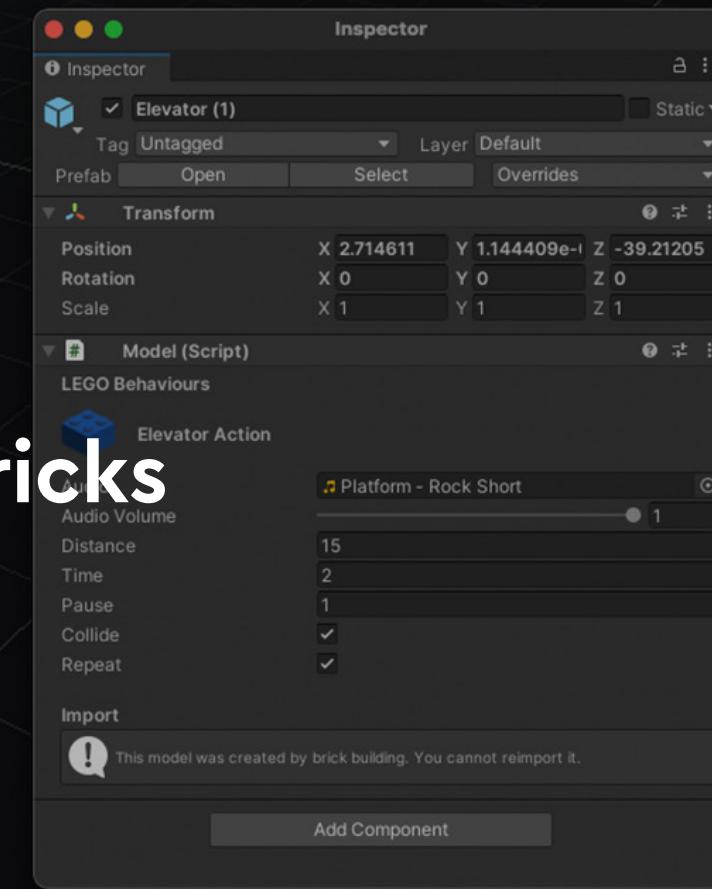
Joystick Demo

The Joystick demo use; 1 Hub, 2 Motors and 1 Force Button. Combining this is into a simple joystick with a thrust button.

The important script is "JoystickController.cs" that shows how the motors are used to control the plane and the button to add a bit of speed.



LEGO Behaviour Bricks





LEGO Behaviour Brick: Overview

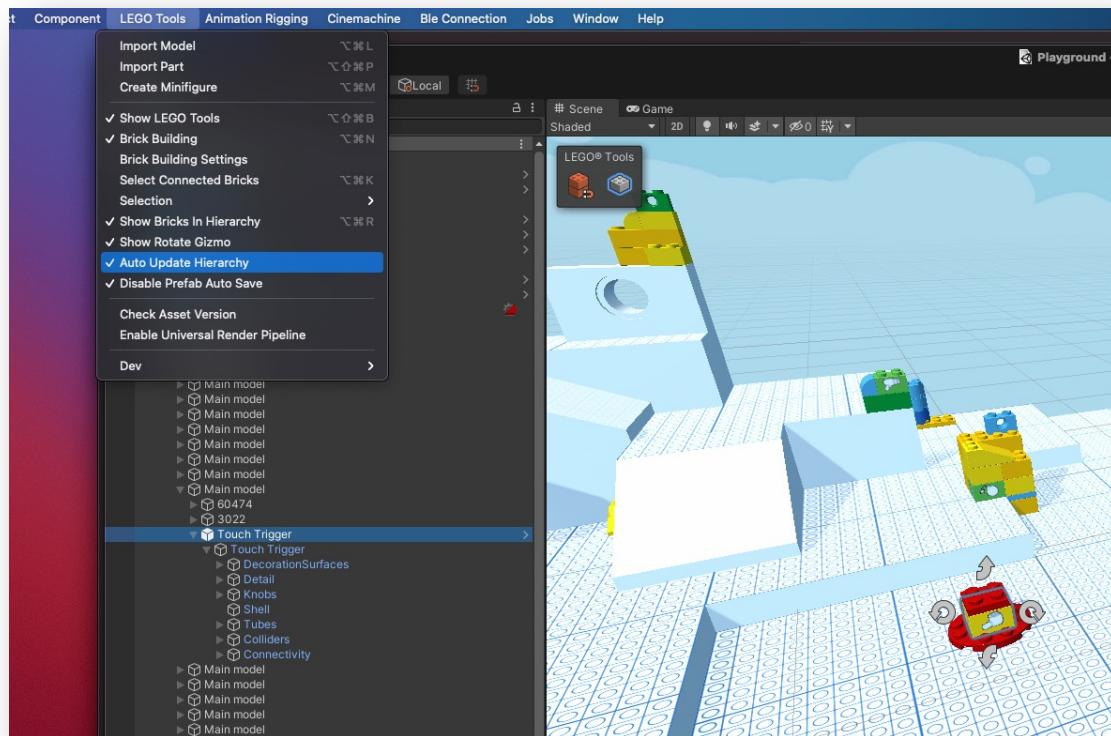
The LEGO Behaviour Brick System got introduced in the LEGO Unity Microgame: [LEGO Microgame | Unity](#)

For a detailed description of all available bricks and how to use them, please refer to this guide:

[Behaviour Brick Manual](#)



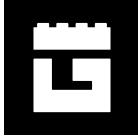
LEGO Behaviour Brick: Hierarchy



Auto Update Hierarchy

It is important that the attached Behaviour Brick to a specific model is child to the model group.

Please enable the "Auto Update Hierarchy" from the LEGO Tools menu



Feedback, Issues or Questions?



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