Marv’s Re-Volt plugin for modern Blender

Source Code

This is the documentation for Marv's Re-Volt plugin for modern Blender.
It is intended to be used with **Blender 3 or 4 versions** specifically.
***Note**: The plugin was updated from Marv’s version by Theman with the help of AI.*

Known Issues

Please report Bugs and suggest features on GitLab.

Features

Import, Export

- World (.w)
- Mesh (.prm)

- Collision (.ncp)
- Instances (.fin)
- Mirror Planes (.rim)
- Hulls (.hul)
- Car / Car Parameters (via parameters.txt)
- Track Zones (.taz)
- Triggers (.tri)
- Models (.m)
- Objects (.fob)
- Visiboxes (.vis)

Missing Formats

- AI Nodes (.fan)
- Position Nodes (.pos)
- Lights (.lit)
- Force Fields (.fld)

Tools

- Re-Volt tool panel
    - Bake light to vertex color
    - Simple vertex painting tool
    - Car shadow generator
    - Texture animation helper
    - Worldcut (export World in split meshes)
    - Trigger Creator / Trigger Copy tool
    - (.taz) Track Zone Creator / Reverse Track Zone IDs tool
    - (.fob) Object Creator
    - (.vis) Visibox Creator
    - Hull Sphere Creator
    - Convex Hull Creator

Installation

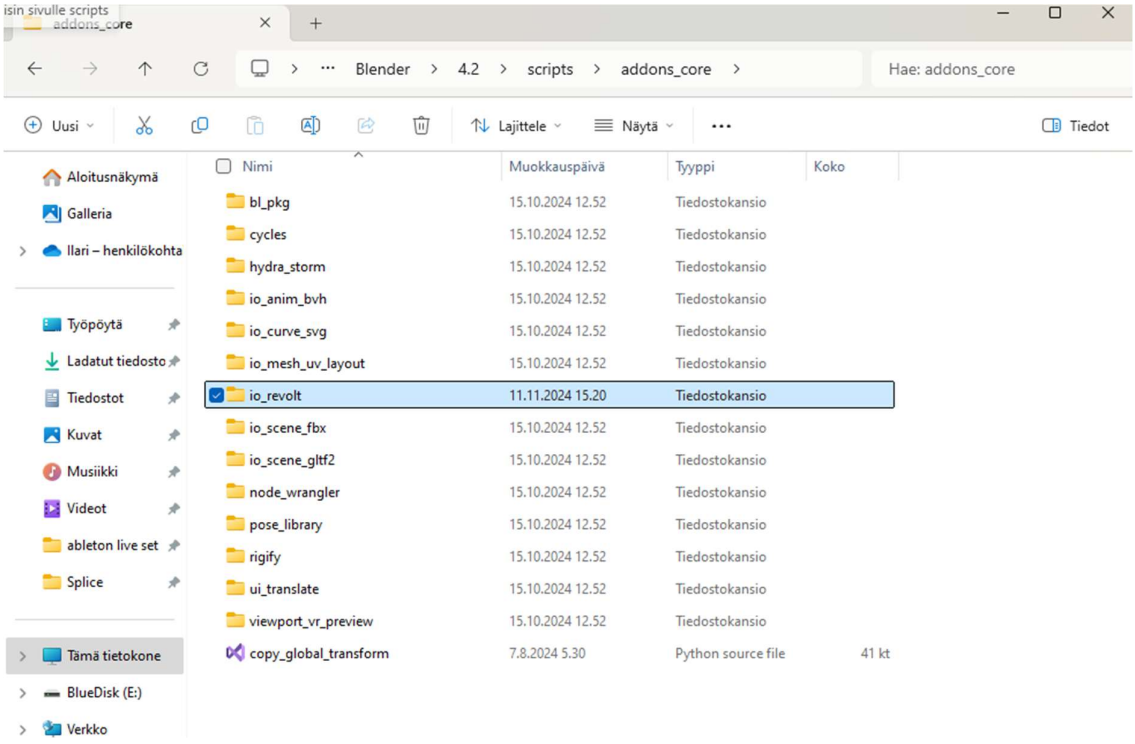
To install the add-on, locate the addons folder within your Blender configuration folder.

For example for me it is located at C:\...\Blender\4.2\scripts\addons_core

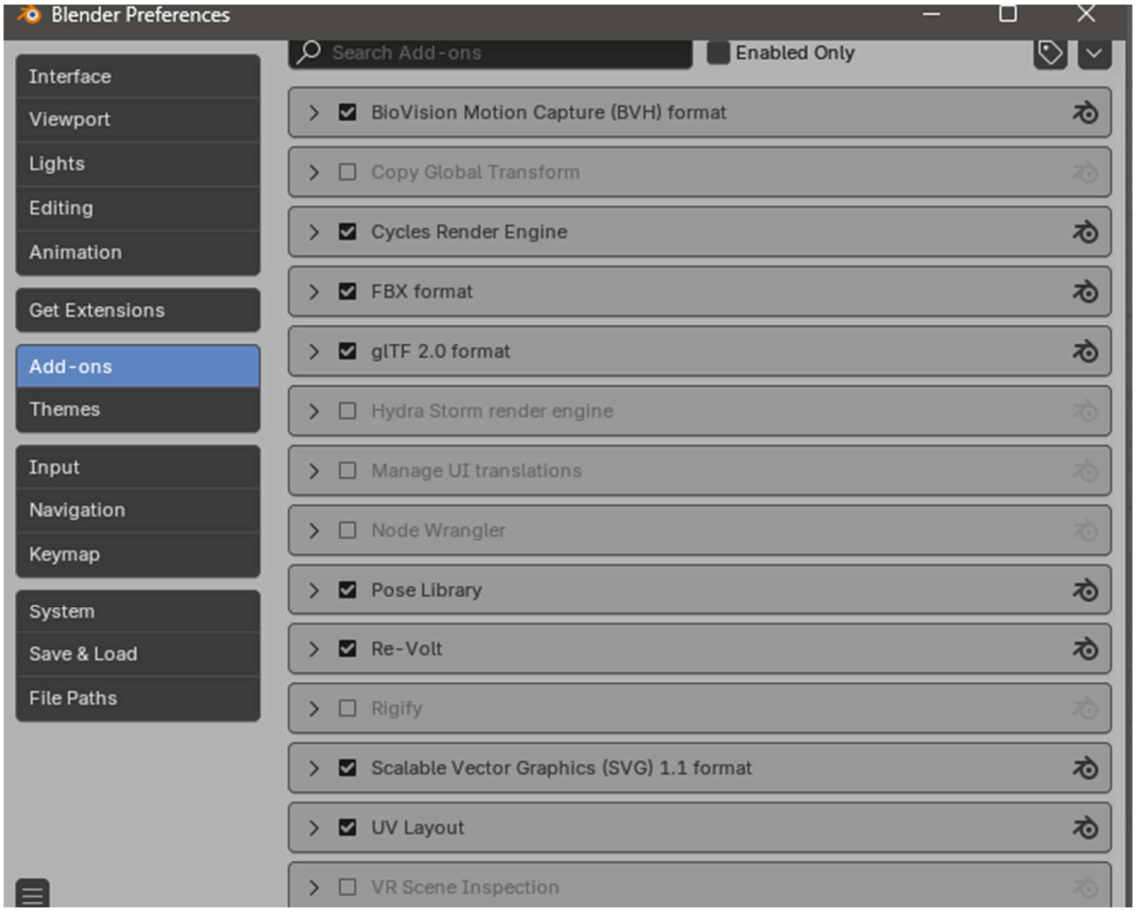
If you're on GNU/Linux, your add-on folder should be located at ~/.config/blender/4.5/scripts/addons_core/, where 4.5 is the **Blender version you are using**.

For more information, see Blender Manual.

Extract the io_revolt folder into the addons folder.



Now start up Blender and open the user preferences (Edit -> User Preferences...). Click on the **Add-ons** tab and check Re-Volt.


Blender Preferences
Interface
Viewport
Lights
Editing
Animation
Get Extensions
Add-ons
Themes
Input
Navigation
Keymap
System
Save & Load
File Paths
Search Add-ons
Enabled Only
BioVision Motion Capture (BVH) format
Copy Global Transform
Cycles Render Engine
FBX format
glTF 2.0 format
Hydra Storm render engine
Manage UI translations
Node Wrangler
Pose Library
Re-Volt
Rigify
Scalable Vector Graphics (SVG) 1.1 format
UV Layout
VR Scene Inspection

File Specifications

The following files are supported by the add-on:

- World (.w)
- Mesh (.prm)
- Collision (.ncp)
- Instances (.fin)
- Mirror Planes (.rim)
- Hulls (.hul)
- Car Parameters (parameters.txt)
- Track Zones (.taz)
- Triggers (.tri)
- Models (.m)
- Objects (.fob)
- Visiboxes (.vis)

Textures:
The texture file name is used by the game engine to determine the texture number for exported faces. Make sure it's named correctly (e.g. tracka.bmp, car.bmp). Currently one car texture and up to 64 track textures are supported, all present files must be named in order using scheme presented bellow.

- 0 tracka
- 1 trackb
- 2 trackc
- 3 trackd
- ...
- 25 trackz
- 26 trackaa
- 27 trackba
- ...
- 51 trackza
- 52 trackab
- 53 trackbb
- ...
- 63 tracklb

Note: If the imported mesh is a **car part**, the texture path will be taken from either car.bmp / carname.bmp (for example a car named bigvolt uses texture bigvolt.bmp). If it's a **level file**, the texture name will be generated from the polygon's texture number and taken from the level folder.

The texture number is also written onto a bmesh integer layer. It is very important to set the texture numbers for each texture image. There is a function called **Calculate Texture Number** for that purpose (assuming the textures are named correctly by following the forementioned texture naming logic). You can also use **Use Texture Number** at the Export Options.

World (.w)

World file is used for the game's race tracks. You have to create meshes, assign textures, do Vertex Colouring, Environment Map colouring, and possible Texture Animations. The .w file's name and the track's foldername as well as the track's .ini file should follow the same naming logic. The texture names were explained above.

Probe Mesh (.prm)

.prm file is used for various parts of the car including body.prm, wheel.prm, spring.prm, axle.prm, pin.prm, spinner.prm, as well as for the Instaced meshes. The assigned material for the texture should be named as "car.bmp".

Also instanced objects are .prm files. They use the texture tracka / trackb / trackc etc. So you would use Texture Number for those as well.

Level of Detail (LoD):
If a PRM file includes multiple meshes all of them will be imported.
A suffix will be appended to the mesh name (|q0 is the highest quality, |q3 is a lower quality).
A fake user will be assigned to them so they're not lost when saving the file.

Note: Only car wheels support LoD.

Collision (.ncp)

All objects of the scene will be merged into one mesh and then exported to the file. Objects will be ignored if they're a debug object or have the *ignore* object property set. Faces that have the material NONE assigned to them will not be exported.

A lookup grid will be automatically exported. This can be turned off in the export settings.

Instances (.fin)

Instance objects are .prm files placed around the track. An instance file contains data about multiple objects. For example you can have multiple “tree” objects in the track, but they may use only one tree.prm file and their location and orientation is saved in the .fin file. Instance’s filename follows the name of the track.

ModelRGB: Instance file saves Model Colour to make the Vertex Colours lighter or darker. This adds a variation to the otherwise similar .prm duplicates.

Mirror Planes (rim)

Mirror planes are .rim files placed around the track. If you want to make a mirror to the track, use this file type.

Hull (.hul)

Note: For importing hull files qhull needs to be installed on GNU/Linux (macOS too) in order to import Hulls (on Arch, install it with sudo pacman -S qhull, package name

may be similar on your distro). The add-on is shipped with qhull.exe for Windows systems, nothing needs to be installed additionally.

Hull files are mainly used for car collision and moving model objects.

Importing a hull file results several Blender objects:
One (sometimes more) **convex hull** which resembles the car body.
The **interior** (one per convex hull) consisting of spheres.

Note: Vertex and edge data is ignored when importing but written to exported files. Many custom .huls don't include vertex and edge data, apparently the game works without them.

Car Parameters

The add-on imports the car's body, wheels, springs, axles and pins and their positions and angles (even wheel camber) using the parameters.txt.
Aerial will be a placeholder object while its location is read from the file. The car parts are exported individually as .prm files. Use **Car Parameters to Clipboard** function for the wheels, springs, axles, pins, aerial and **locations/ orientation**.

Track Zones (.taz)

You can import / export track zones, which are shown in Blender as transparent meshes. There is a function in the addon called **Reverse Zone IDs** with which you can make the reverse (R) track zones. The functions are in **Scene** tab.

Triggers (.tri)

You can import / export MAKEITGOOD Triggers, which are shown similarly as Track Zones in Blender. There are functions in **Scene** and **Object** Tabs to choose the correct trigger, set its ID and even copy a trigger. You can also search for any Trigger that is in Blender Scene with “Find Special Objects” UI button at Output Tab.

Models (.m)

Models are used as MAKEITGOOD objects in-game via MAKEITGOOD. You can modify the model file’s graphics in Blender, but you must define the .fob (model

placement and parameters) ingame with MAKEITGOOD. It is possible to use Texture Animations for models.

Objects (.fob)

Objects can be created also in MAKEITGOOD in-game. You can modify the object file's ID and sub-properties in Blender, and while being able to adjust the angle of the object, you can only see the presentage of the actual Object in-game. You can also search for any Object that is in Blender Scene with "Find Special Objects" UI button at Output Tab.

Visiboxes (.vis)

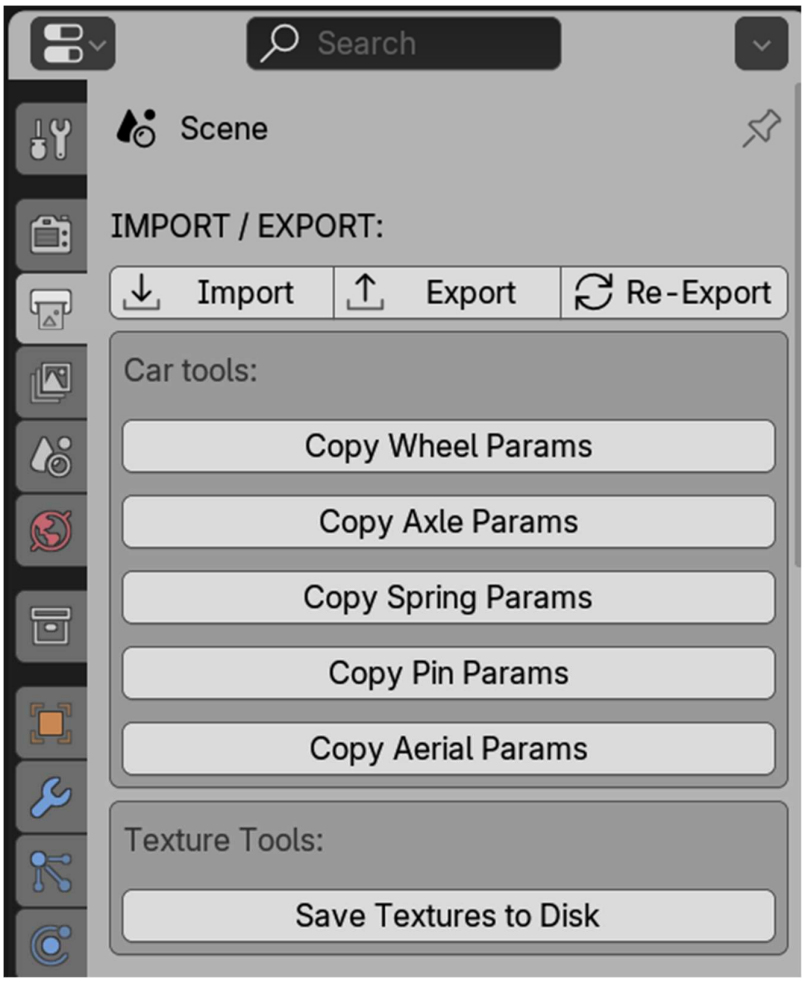
Visiboxes can be created also in MAKEITGOOD in-game. You can modify the visibox file's ID and sub-property in Blender, and you're able to adjust the size of the visibox by modifying their size in Blender. You can also search for any Visibox that is in Blender Scene with "Find Special Objects" UI button at Output Tab.

Re-Volt plugin User Interface

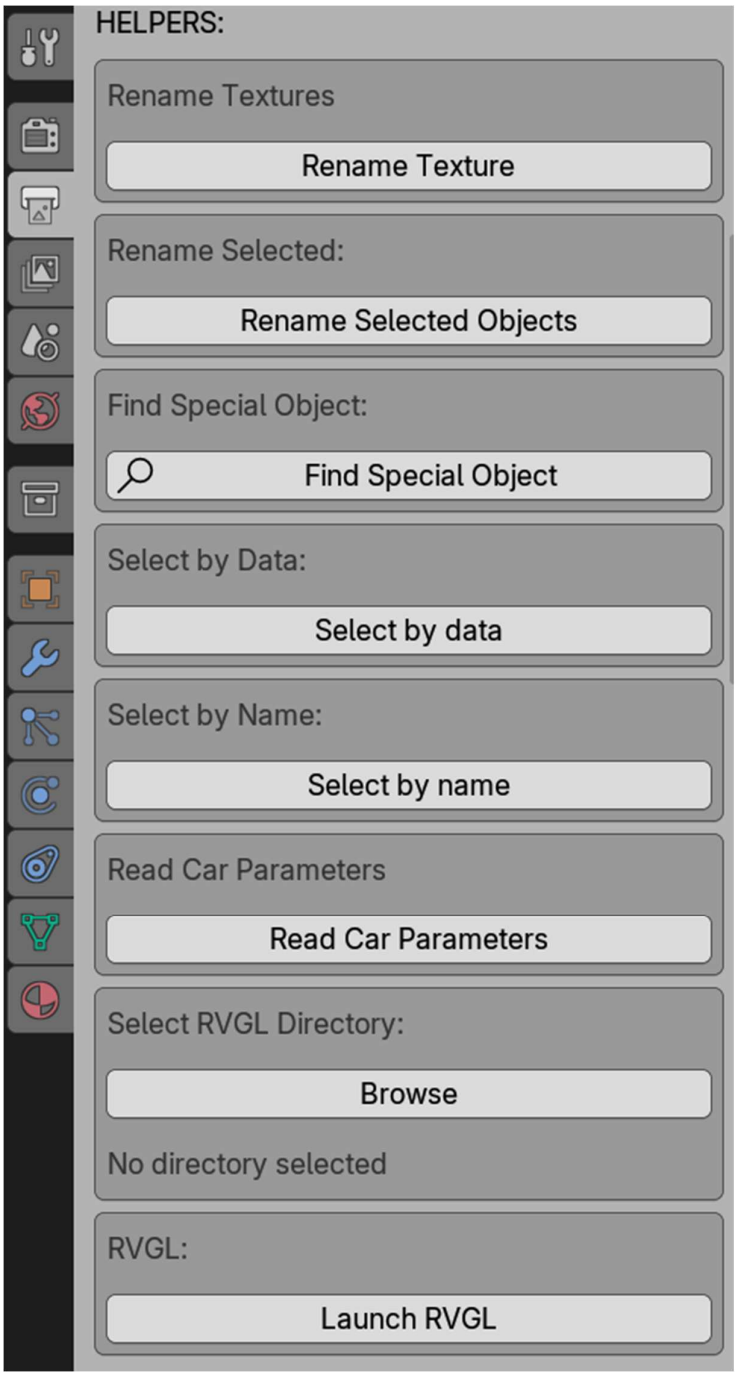
The user interface is located in the **Properties View**.
The user interface is scattered along the **Output**, **Scene** and **Object** Tabs.

Mesh Face Properties, NCP Properties and **Vertex Colouring** appear and work only in the **Edit Mode**. Object Tab is only visible when you have an object selected.

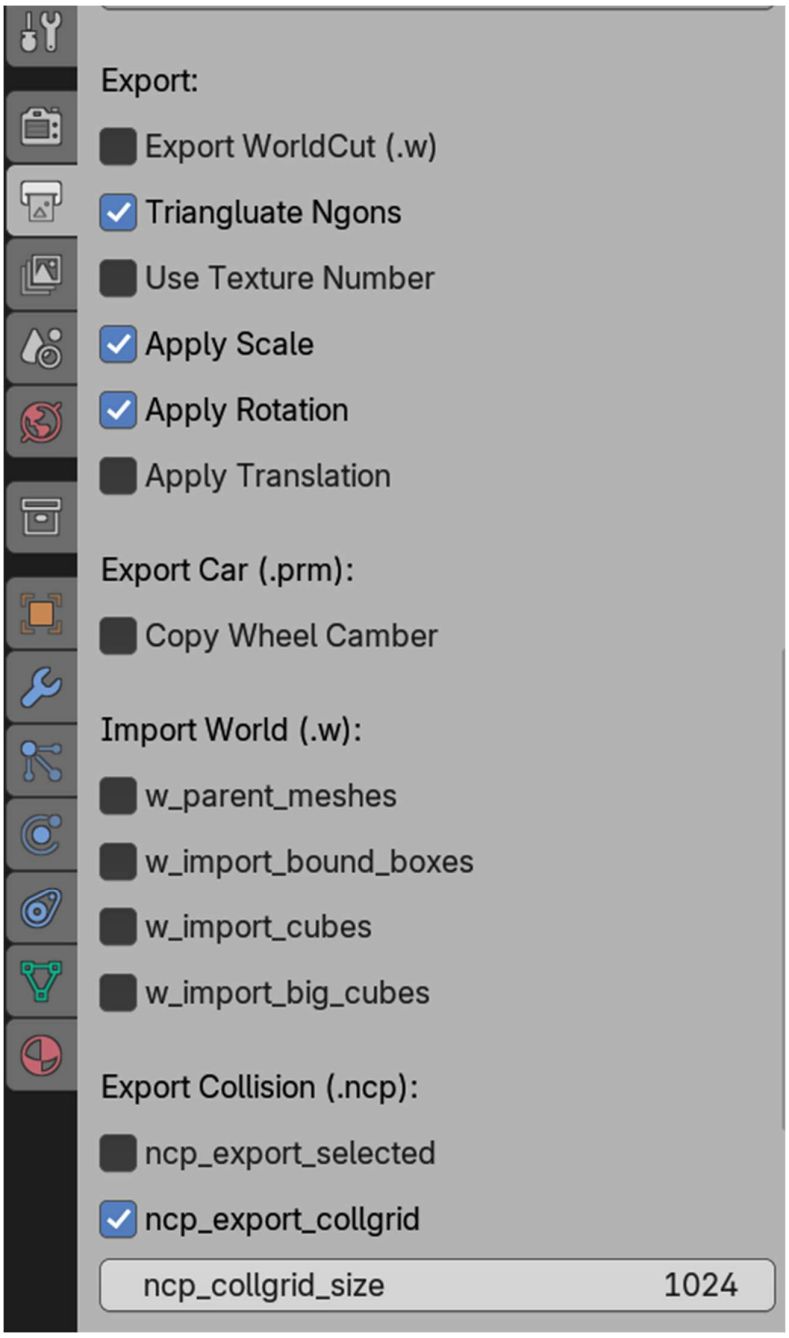
Output Tab 1/3



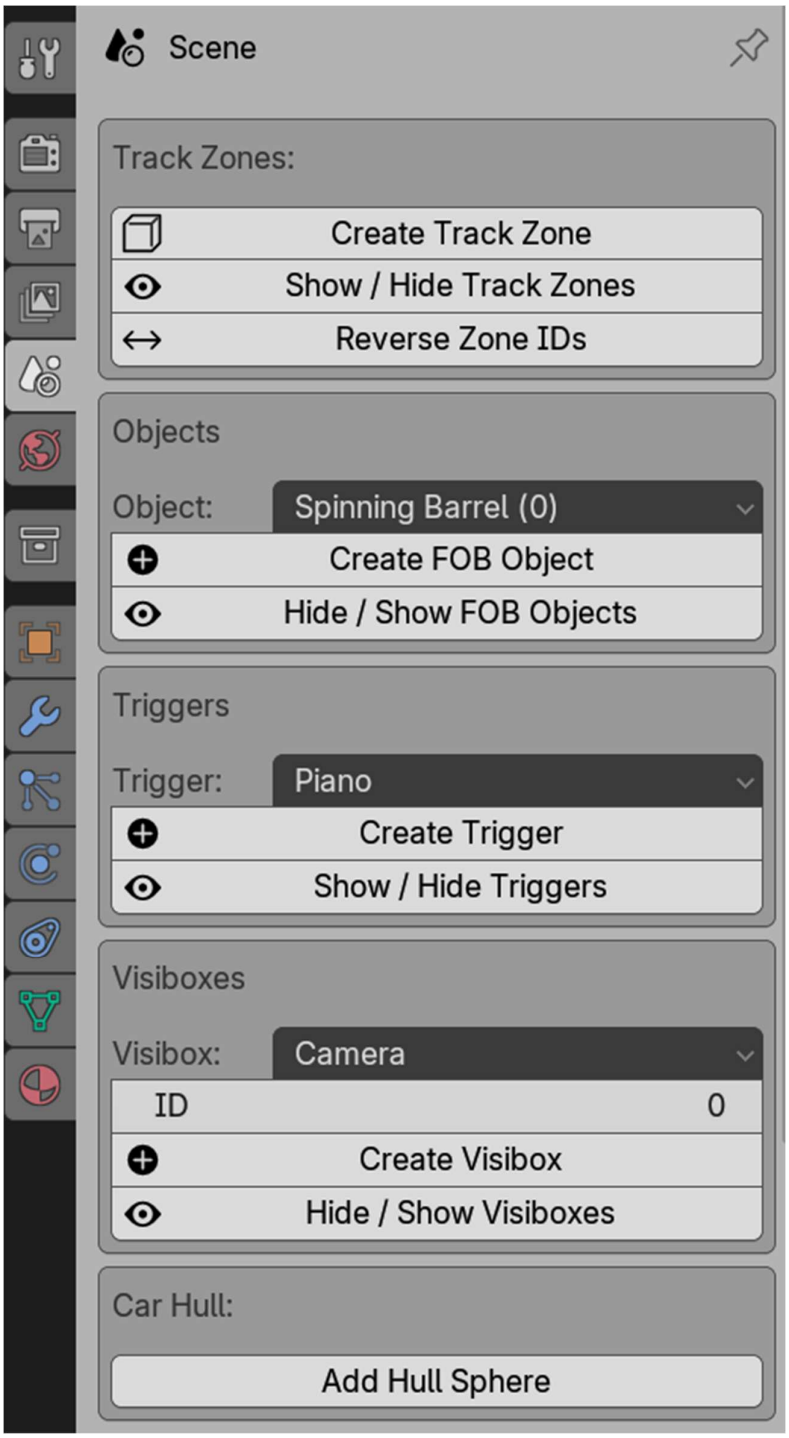
Output Tab 2/3



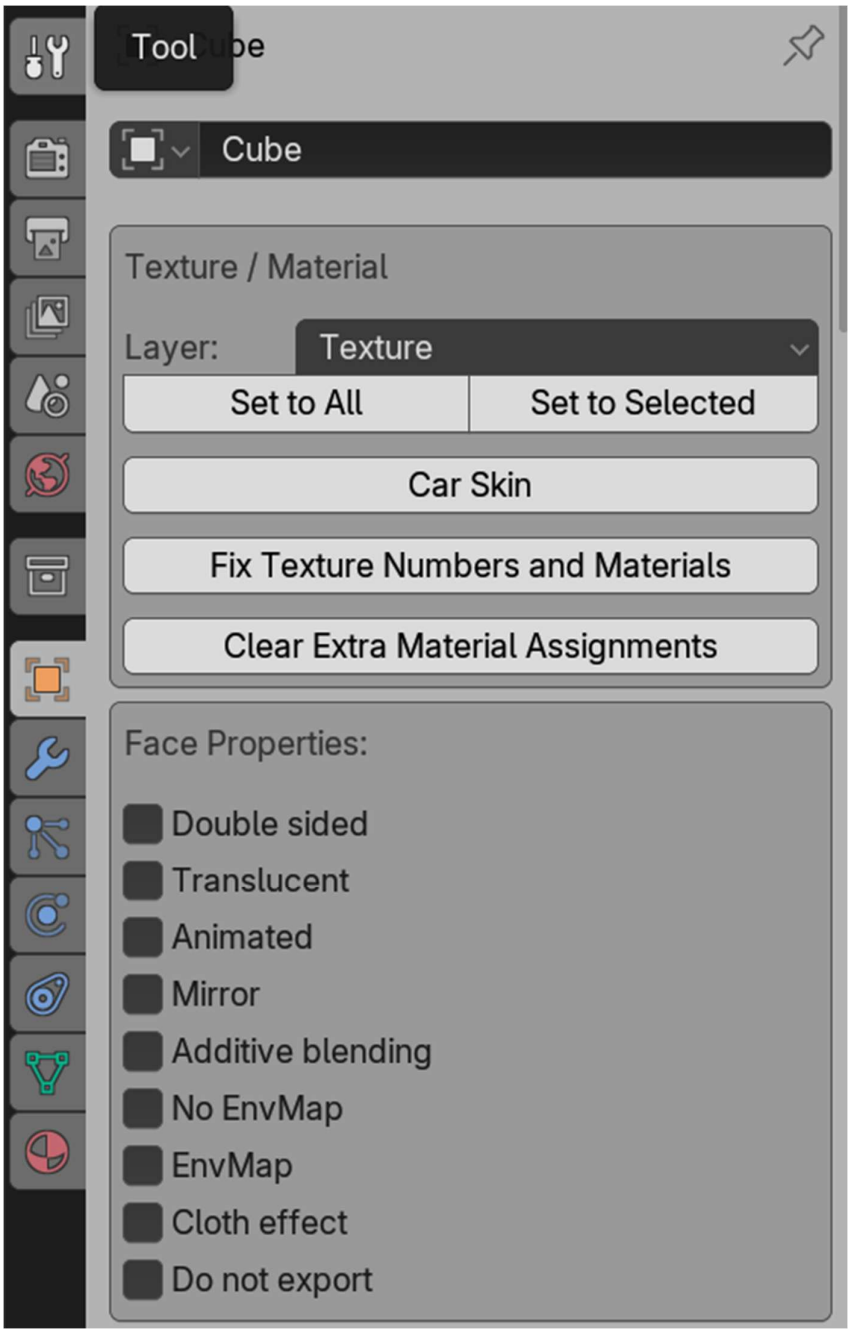
Output Tab 3/3



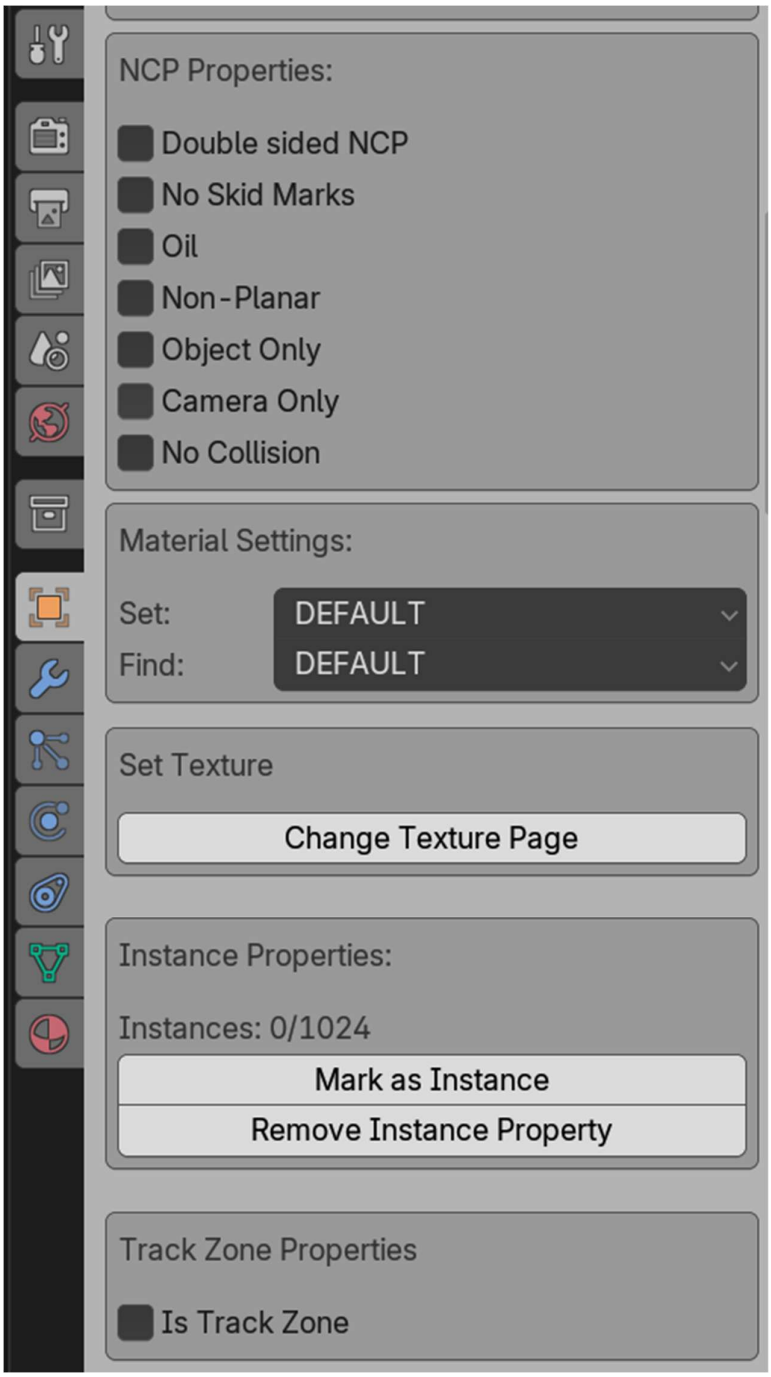
Scene Tab:


Scene
Track Zones:
Create Track Zone
Show / Hide Track Zones
Reverse Zone IDs
Objects
Object:
Spinning Barrel (0)
Create FOB Object
Hide / Show FOB Objects
Triggers
Trigger:
Piano
Create Trigger
Show / Hide Triggers
Visiboxes
Visibox:
Camera
ID
0
Create Visibox
Hide / Show Visiboxes
Car Hull:
Add Hull Sphere

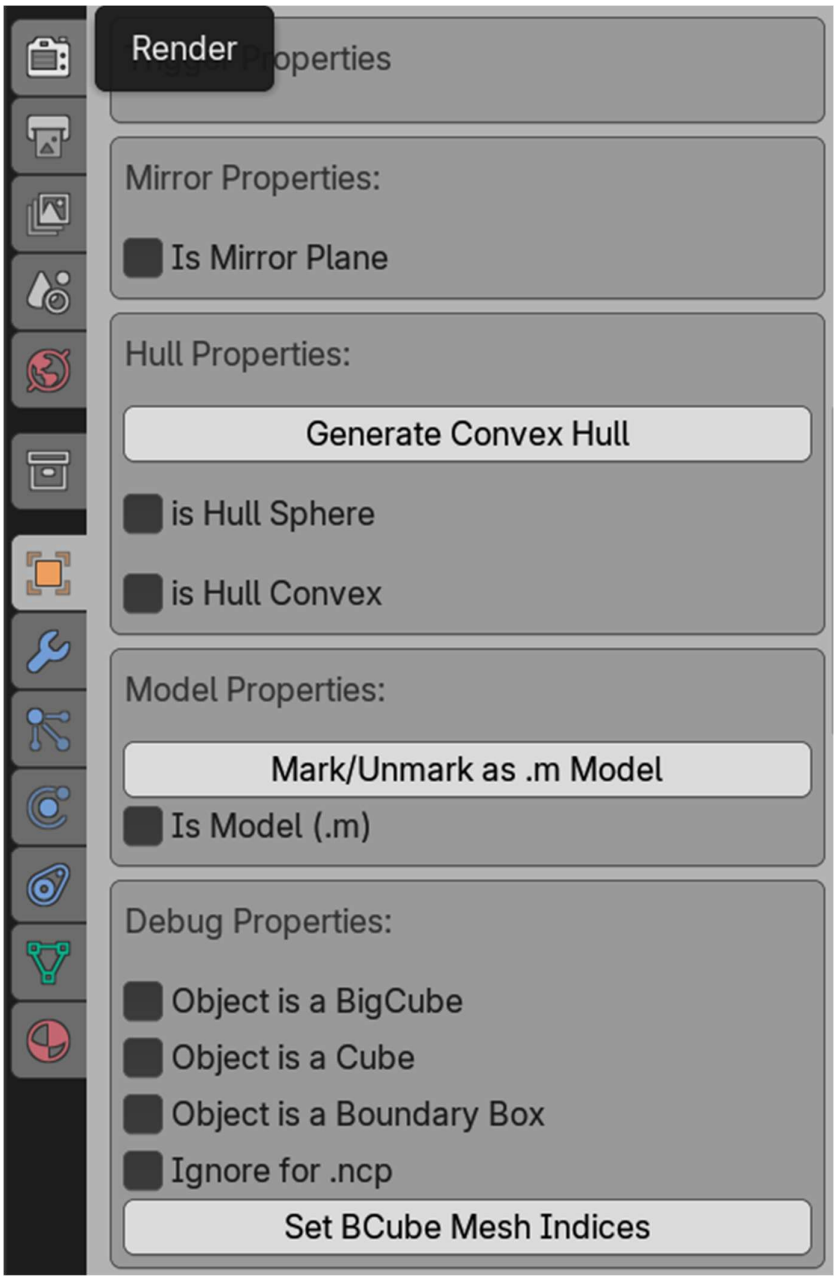
Object Tab (Edit Mode) 1/5:



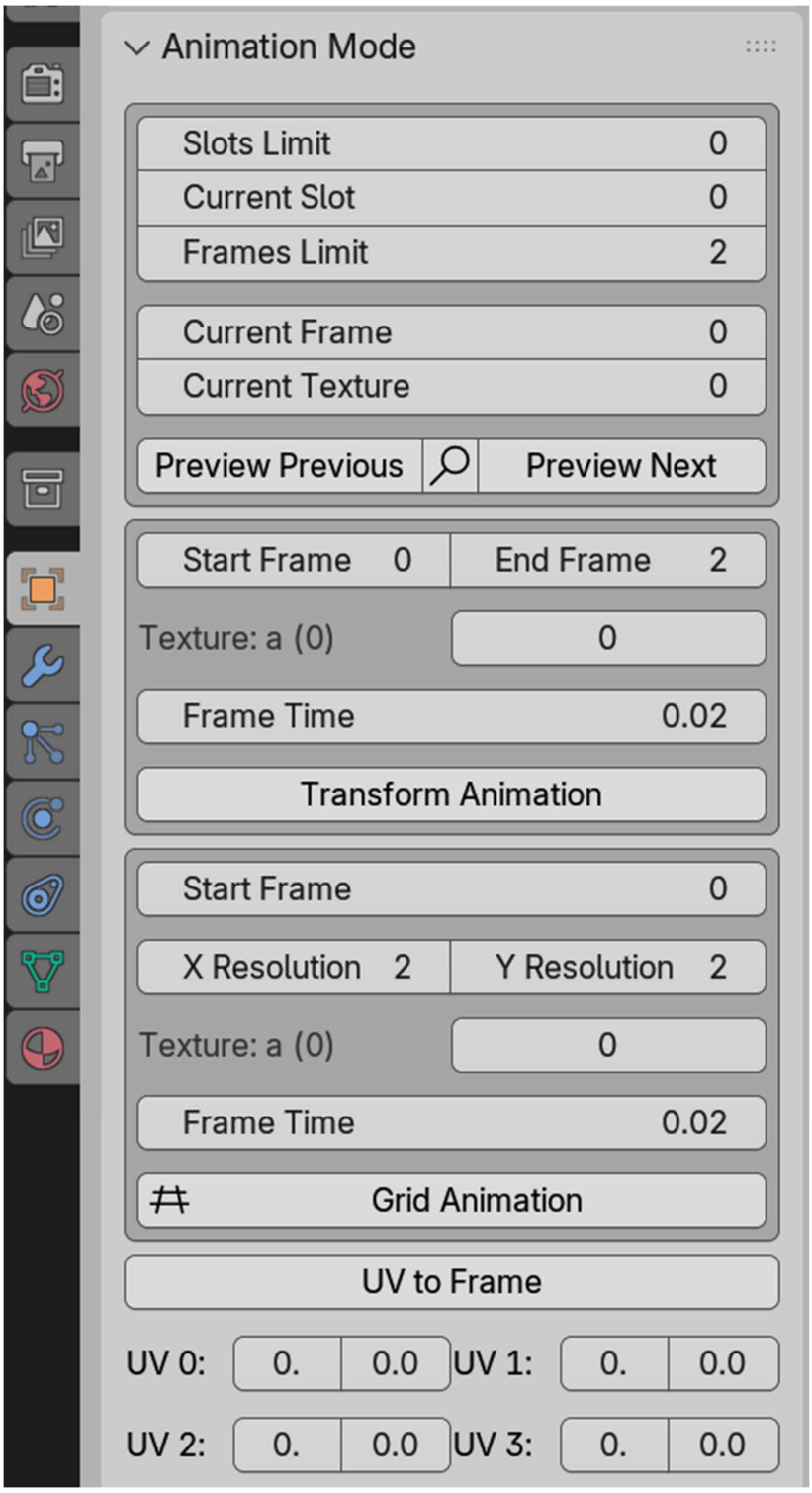
Object Tab (Edit Mode) 2/5:



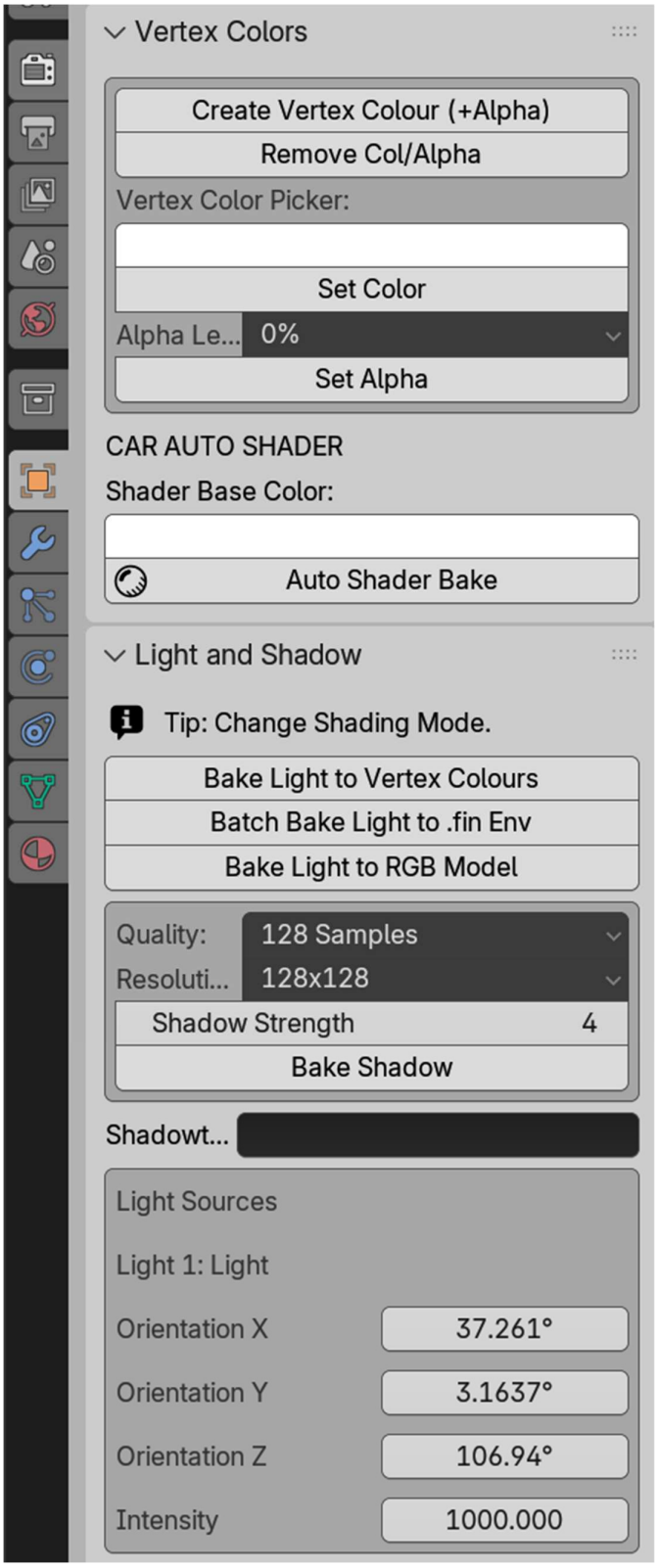
Object Tab (Edit Mode) 3/5:



Object Tab (Edit Mode) 4/5:



Object Tab (Edit Mode) 5/5:


Vertex Colors
Create Vertex Colour (+Alpha)
Remove Col/Alpha
Vertex Color Picker:
Set Color
Alpha Le...
0%
Set Alpha
CAR AUTO SHADER
Shader Base Color:
Auto Shader Bake
Light and Shadow
Tip: Change Shading Mode.
Bake Light to Vertex Colours
Batch Bake Light to .fin Env
Bake Light to RGB Model
Quality:
128 Samples
Resoluti...
128x128
Shadow Strength
4
Bake Shadow
Shadowt...
Light Sources
Light 1: Light
Orientation X
37.261°
Orientation Y
3.1637°
Orientation Z
106.94°
Intensity
1000.000