Realistic Car Controller 2.8

Package Includes

8 Configurated Vehicle Prefabs for READY TO USE,

1 Driver Animated Vehicle by BÜMSTRÜM,

Configurated UI and NGUI Controller for Mobile, and Dashboard Prefabs,

5 Demo Scenes for Presenting UI Mobile Controller, NGUI Controller, AI Controller, FPS Enter-Exit, and Desktop Controller,

User Friendly Editor Scripts,

AI Controller,

All Necessary Scripts,

Extremely Easy To Use,

Engine Sounds, Gear Sounds, Crash Sounds,

And more...

You can find more updated details on

http://www.bonecrackergames.com/#!Realistic%20Car%20Controller%20Documentation/c1z2r

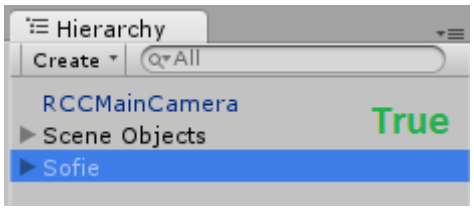
(You can zoom in with CTRL + ScrollUp for enlarge PDF pages)

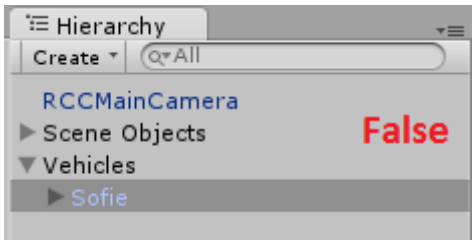
Contents

First to Do!

Some users couldnt create just 2 new layers, or just they didn't read this documentation. So, you don't need to create layers no longer. I could include current Project Settings to the package. But this would overwrite your current Project Settings, and you will loose everything about your current settings. That's why I didn't include it. That's why you have to create 2 new layers. But as I said, you don't need to create them.

Just don't parent your cars to another gameobject. Your car must be at root of your hierarchy;





Each vehicle has own RCCCarControllerV2 script. Each vehicle is responsible for own RCCCarControllerV2.

8 Main Categories for Easily and Understandable Creating-Configurating Vehicles.

Wheels, Steering, Mechanic Configuration, Lights, Sounds, Mobile Controller, Dashboard, Smoke, and Damage Settings.

About New Wheel Colliders

As you well know, Unity 5 uses Physx 3.3. They have improved wheelcolliders too. I'll explain new features about this;

Wheel Colliders can actually spin if you apply high torque to them. You can set your force point on Wheel Colliders. Realistic handling. Almost perfect everything. But... There are some bugs about current Wheel Colliders (5.1.1f1).

Wheel Colliders are based on your vehicle rigidbody. E.g. your Wheel Collider's spring force is 35000, and your vehicle mass is 1500. So when you lower your vehicle mass, suspension will loose force and vehicle will hit the ground unrealisticly. This is known bug about new suspension calculation.

Enabling/disabling "isKinematic" bool in Rigidbody, requires re-enable all Wheel Colliders. Otherwise Wheel Colliders won't work after enabling/disabling "isKinematic" bool.

Sometimes Wheel Colliders are lagging and shaking when your Wheel Collider's settings are unproportional, or your Wheel Collider's mass is too heavy/light.

Root of the vehicle scale must be 1, 1, 1. Otherwise Wheel Colliders positions will be buggy-changed. Just try it, and you will see your Wheel Colliders positions are changing offsets while scaling root of the vehicle.

I'll update the package with each Unity update.

Creating New Vehicles

Some developers struggling with creating new vehicles. So, i have improved the editor script for simplify creating new vehicles.

Warning

Script and behavior depends on vehicle X, Y, Z directions. So, your vehicle model and wheel models transform directions ~~should~~ MUST be correct. Just check the demo scenes.

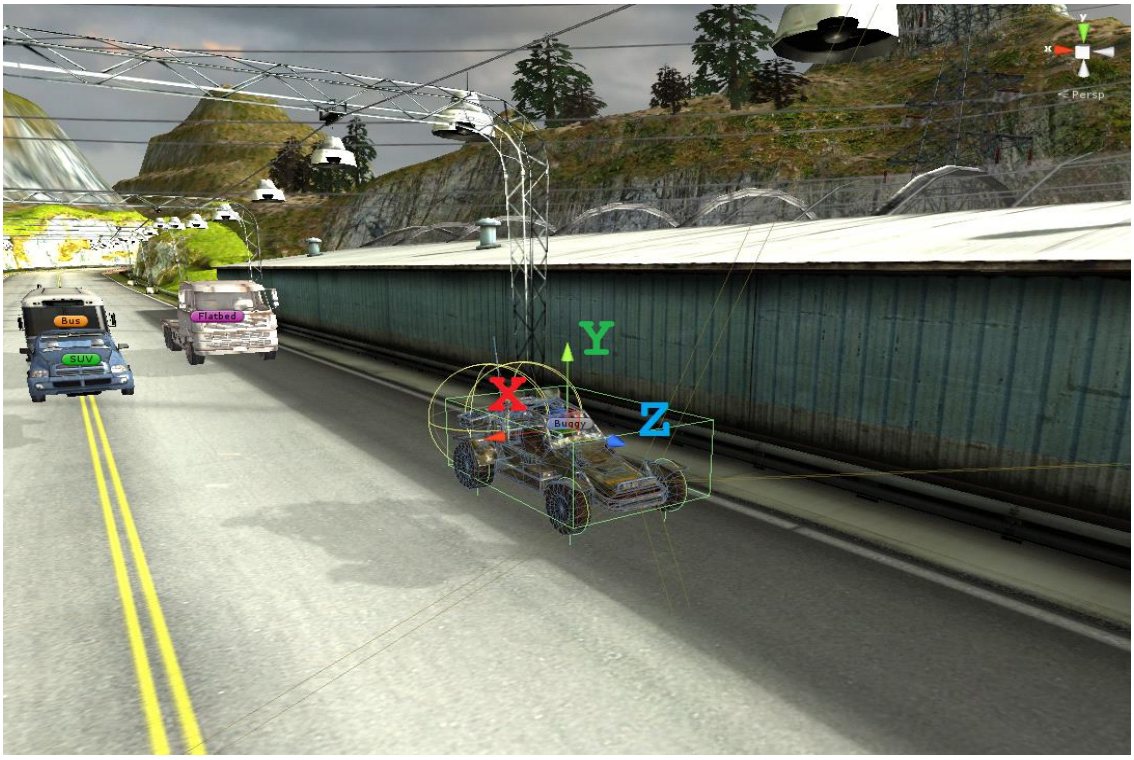
Important

Be sure you are in PIVOT and LOCAL mode while checking directions.

X should Right,

Y should Up,

Z should Forward.



Many designers are making models with wrong directions. This is really painful if you don't know how to fix models directions. 2 ways for fixing this;

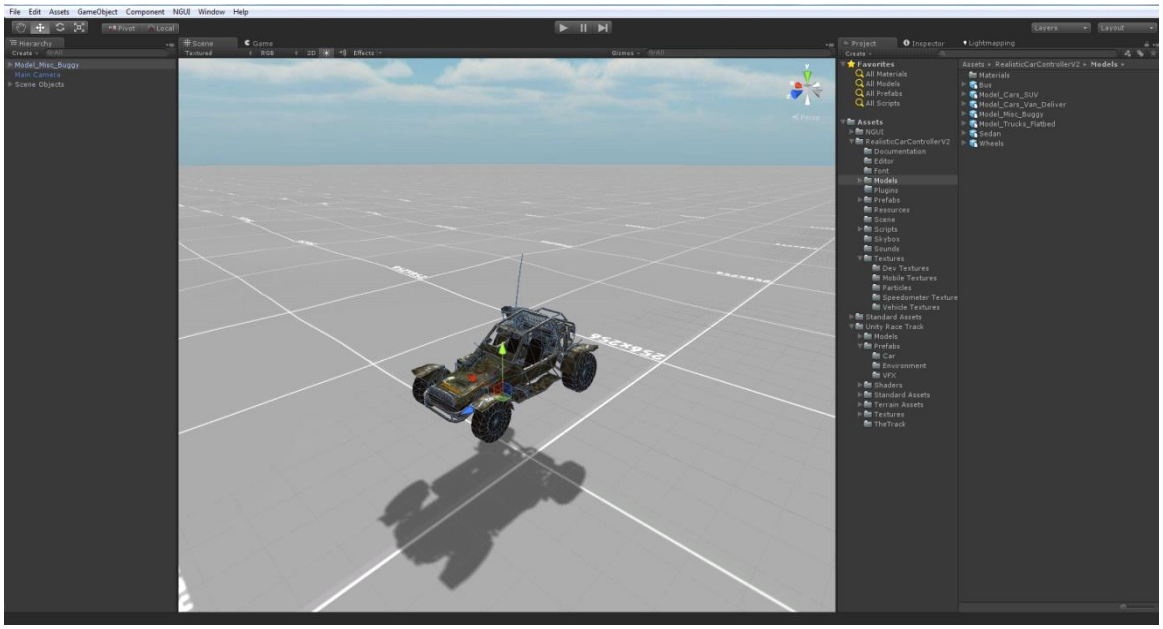
1 – Create a empty Gameobject at the center of the model, and rotate the new Gameobject to correct directions. Then parent your model in to this new Gameobject. (I don't prefer this way. If you want to do clean work, you should do this on your Designing Software).

2 – Fix model's directions and pivot positions inside your Designing Software. Check my Youtube Channel for how to do this in 3ds Max.

So, you have checked inputs, your vehicle and wheel models pivot positions, and their X, Y, Z directions. Everything is OK right? Then...

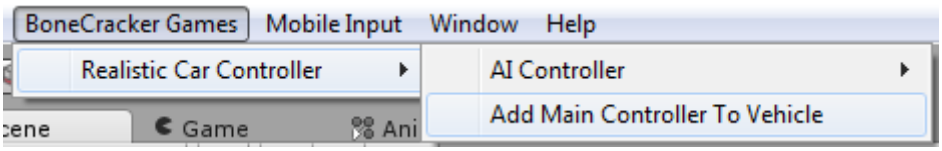
Drag and drop your Vehicle Model to your existing Scene and let's get started;

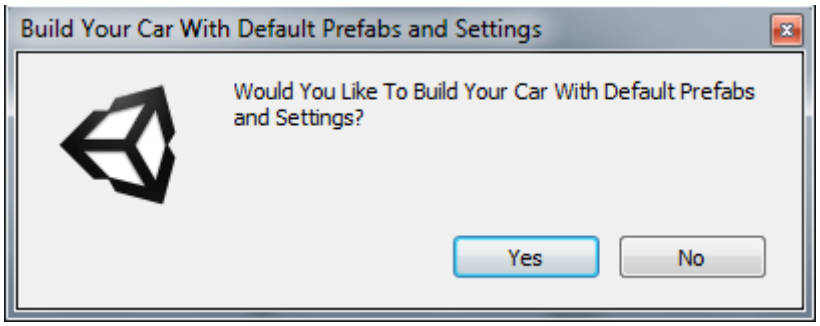
(Some images were taken in Unity 4, but they are nearly same with in Unity 5)

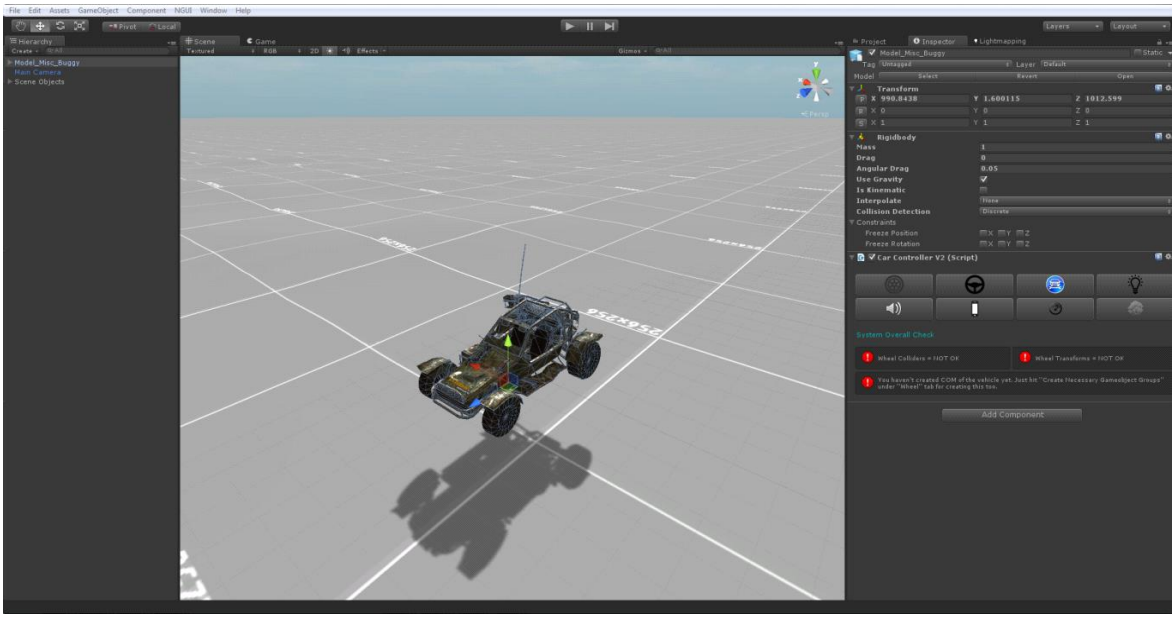


I'm using "Extreme Vehicle Models" for this. This is really great and mobile optimized asset for low price. I highly recommend you to use this amazing asset for your Project.

Now, you have to add RCCCarControllerV2 to root of the vehicle. Just click Realistic Car Controller Menu and Add Main Controller To Your Vehicle;

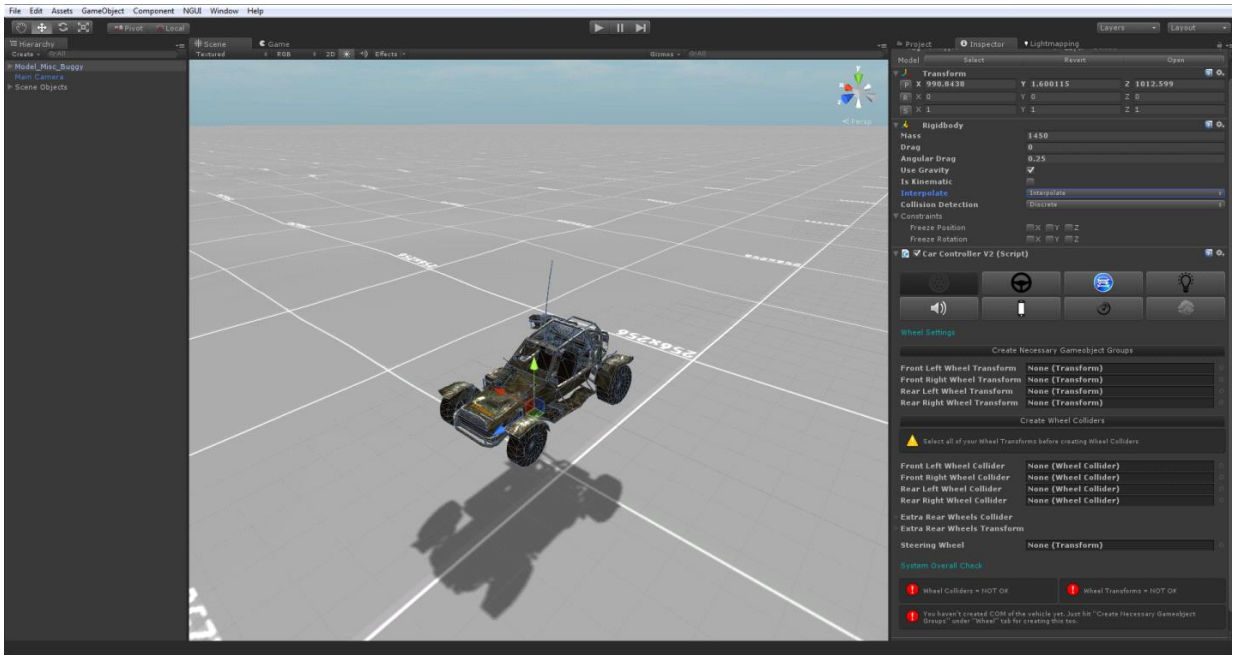




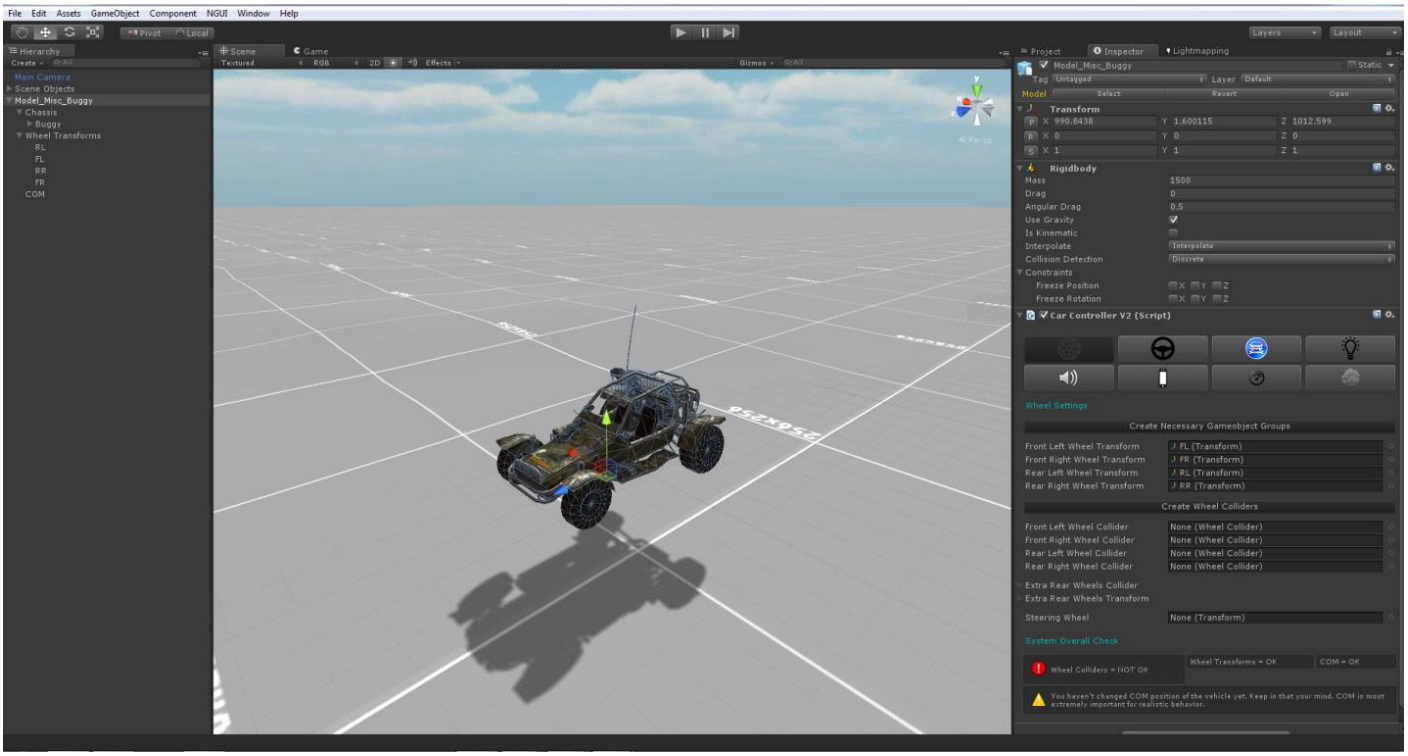


As soon as when you added RCCCarControllerV2 script to your car, Rigidbody component will be added automatically. Set your mass to around 1250-1750 for this type of the vehicles. Interpolate Mode = Interpolate, Angular drag is around 0.05 – 0.15 for medium angular velocity.

After rigidbody settings, click “Wheel” tab in the editor script;



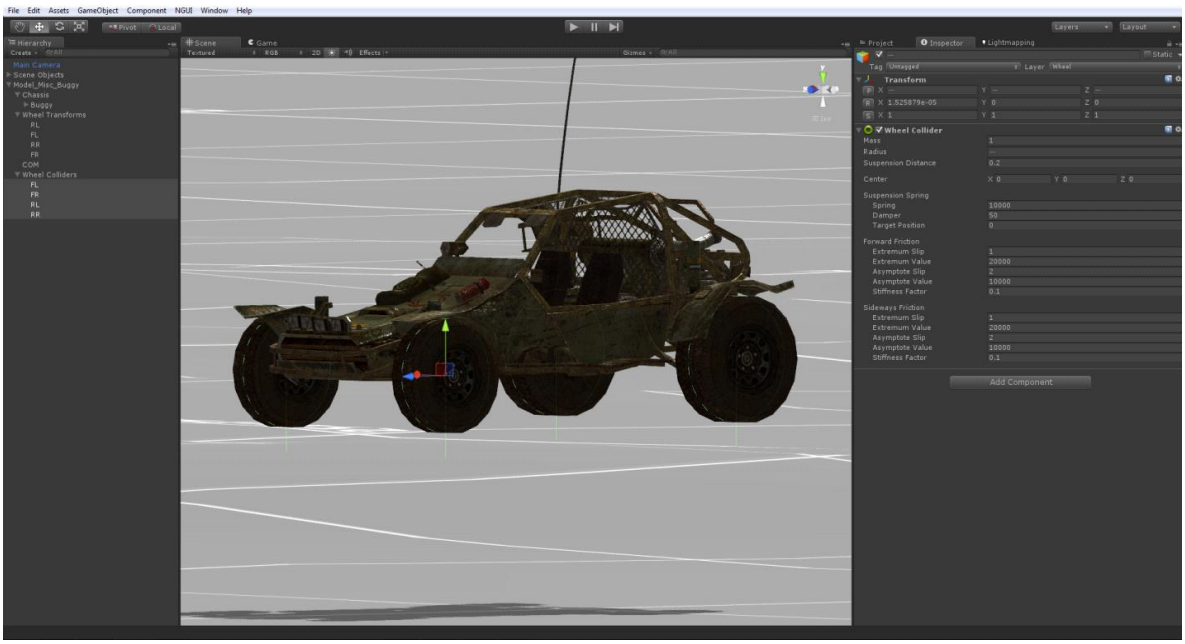
Click “Create Necessary Gameobject Groups”. This will create Chassis, Wheel Transforms, and COM of the vehicle (You don’t need to do this if you add controller from tab menu).



After creating these necessary gameobjects, simply drag and drop your model's parts to corresponding property. Your wheel gameobjects to "Wheel Transforms", your chassis to "Chassis". Then select your wheel transforms inside editor script.

After selecting your wheel transforms, hit the "**Create Wheel Colliders**" for creating Wheel Colliders with proper radius, suspension, damper, and friction curves AUTOMATICALLY*.

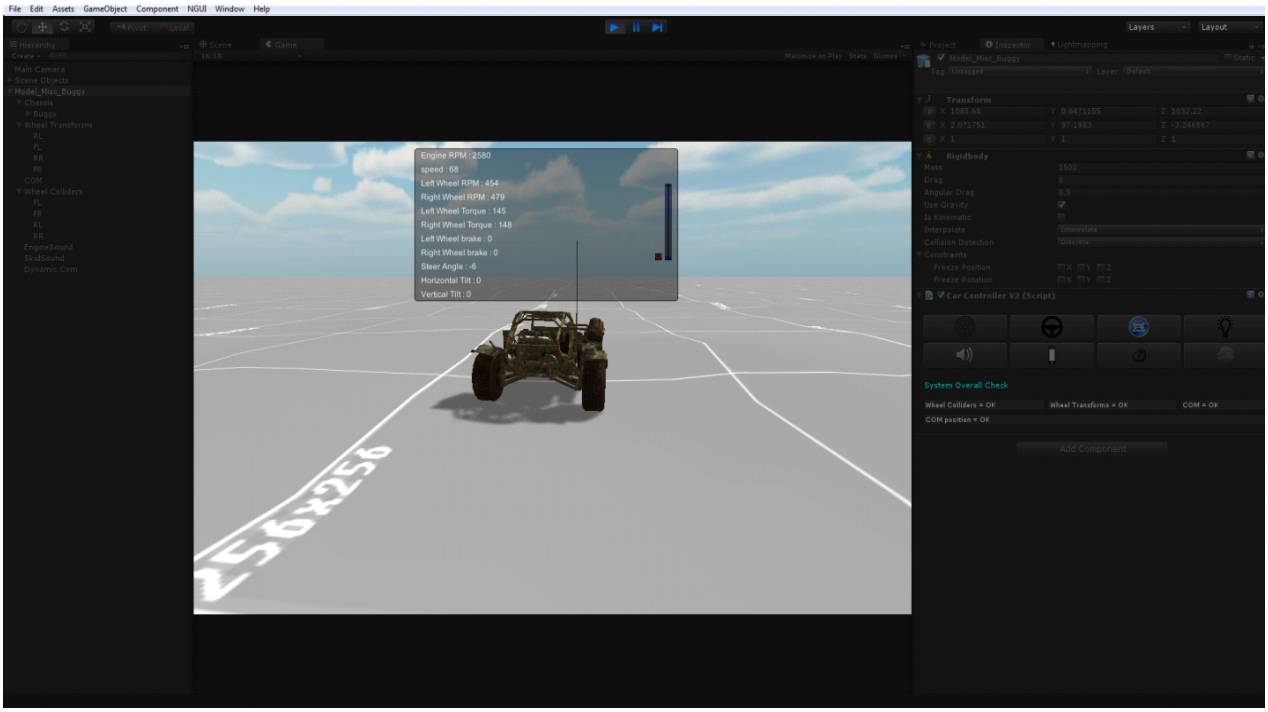
*(If your vehicle model direction is wrong, script will create Wheel Colliders at wrong angles)



Generated Wheel Colliders settings are fine for 1250-1750 mass vehicles. If you have heavy vehicle such as bus or truck, you must increase Wheel Collider's mass. Your vehicle must have one of any Colliders (Such as Box Colliders, or Mesh Colliders etc...) Otherwise, physics won't work.

After end up with Wheel Transforms and Wheel Colliders Configurations, place your COM to correct place. This is our Center Of Mass. And COM's position is effecting whole behavior. Usually COM of the vehicle is at just below about front seats. Engine and transmission is at front of the vehicle, and they are heavy. At this model, engine and other stuff is placed to back of the vehicle. But i'm not gonna place the COM to back of the car. Why? Because this vehicle is RWD, and can flip back easily when applying high torque to rear wheels. So, i'll just set it to just like this;

Runs perfectly after just few clicks.



Default Main Settings are;

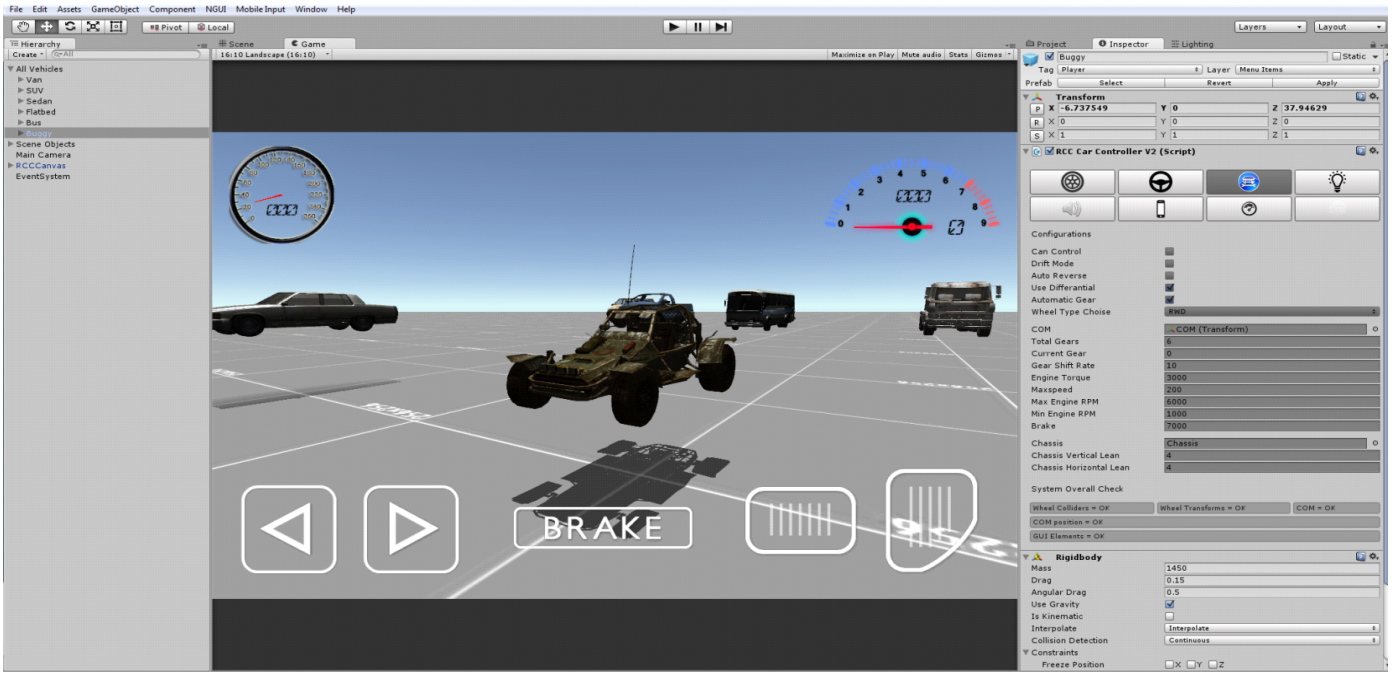
Engine Torque = 2500;

Brake Torque = 2500;

Maximum Speed = 220;

Wheel Type = RWD (I used RWD for this vehicle);

Use Differantial, Automatic Gear, etc...



Configurate your vehicle as you wish. If you want to use manual gear, you need to create 2 Inputs. "RCCShiftUp" and "RCCShiftDown". And set which key you want to. You can create new Inputs by Edit → Project Settings → Input.

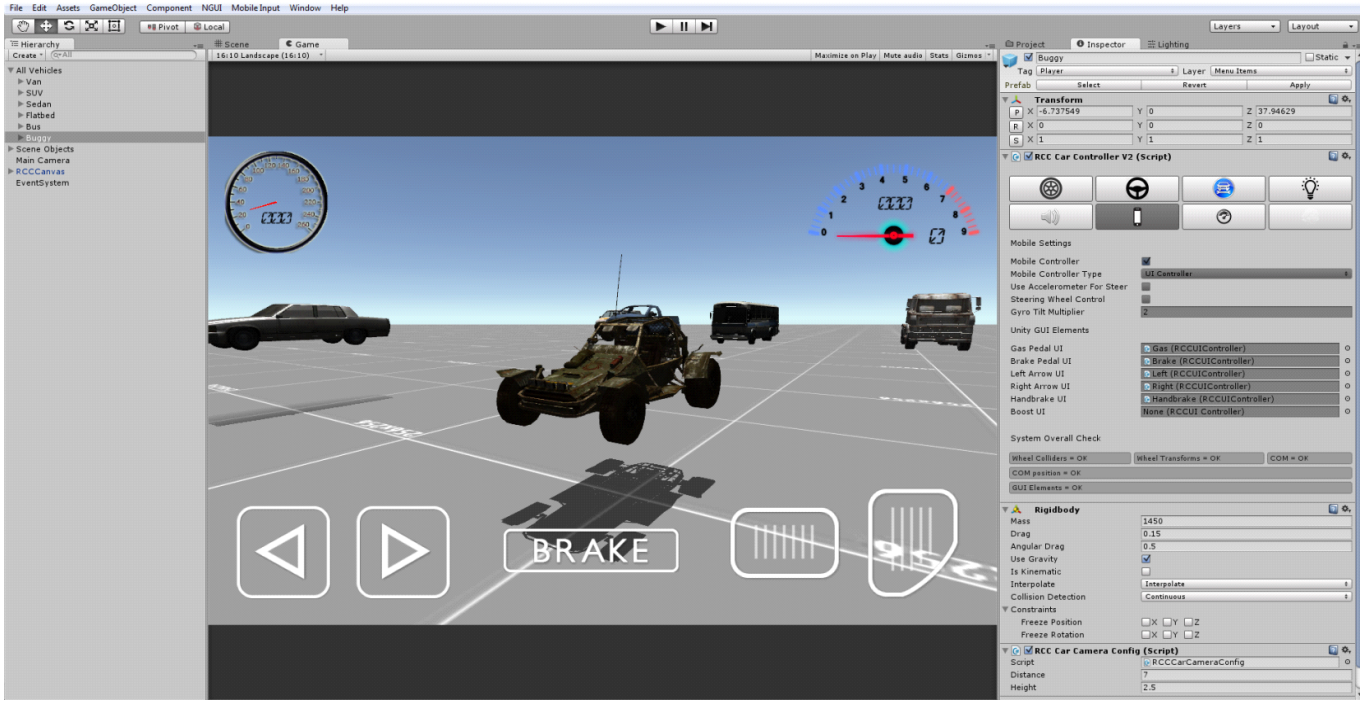
Mobile Controllers

Now let's make our vehicle can be controller by Mobile Controller. Just click "Mobile" tab in the editor script and enable "Mobile Controller".

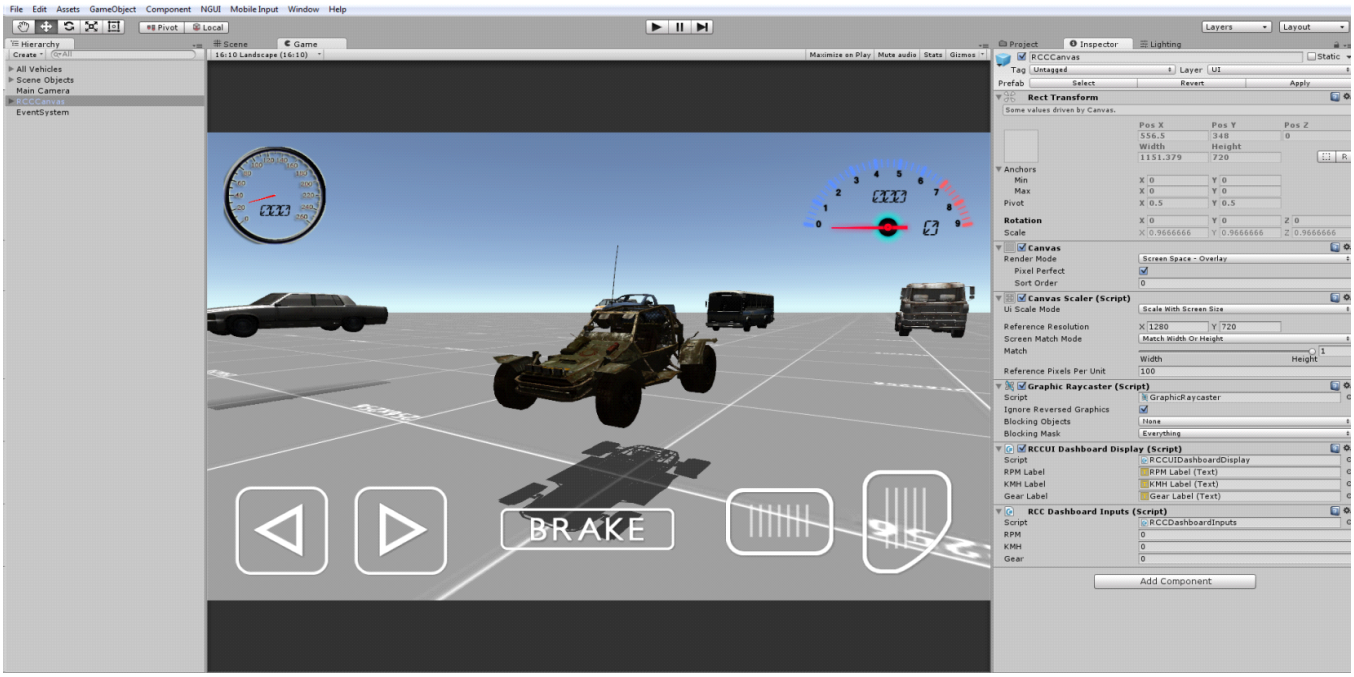
Package supports two type of controller and dashboard display;

- Unity UI (+4.6),
- NGUI.

Mobile Controller (With Unity UI)



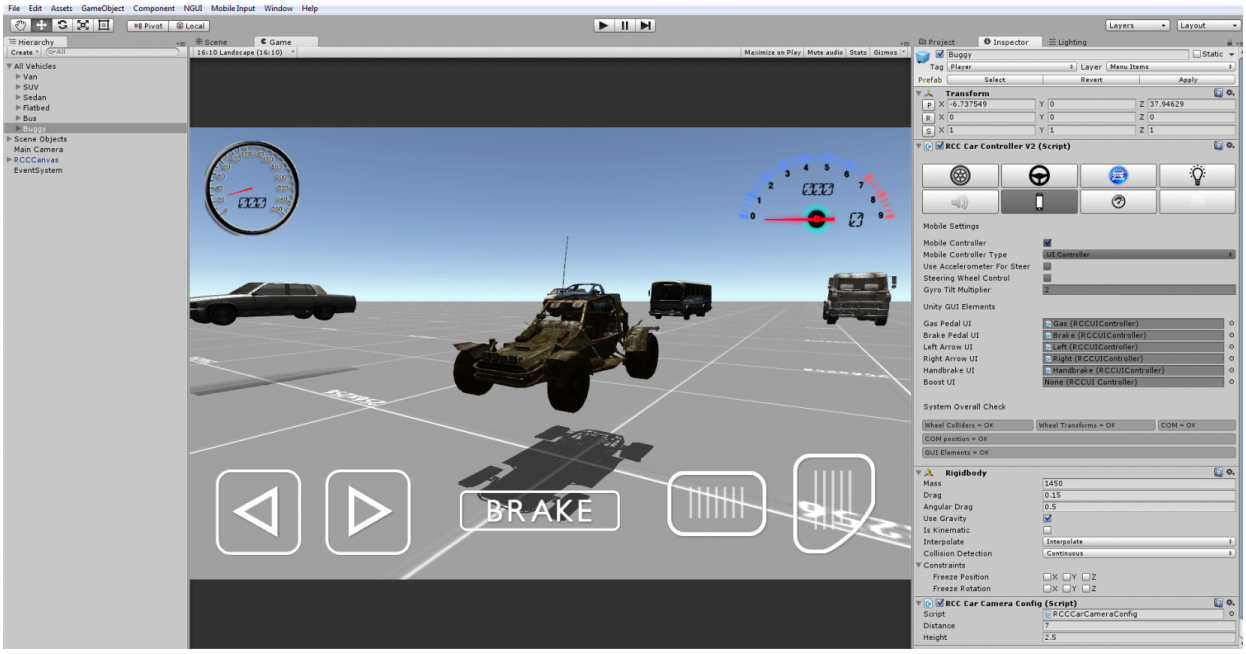
Default Mobile Controller type is "UIController". You will find "RCCCanvas" prefab under RealisticCarControllerV2/Prefabs. Drag and drop to your Hierarchy.



Each UI controller gameobject has “RCCUIController” script for inputs.

~~(Obsolete)Select all of your UI controller elements inside the editor script, and give it a try.~~

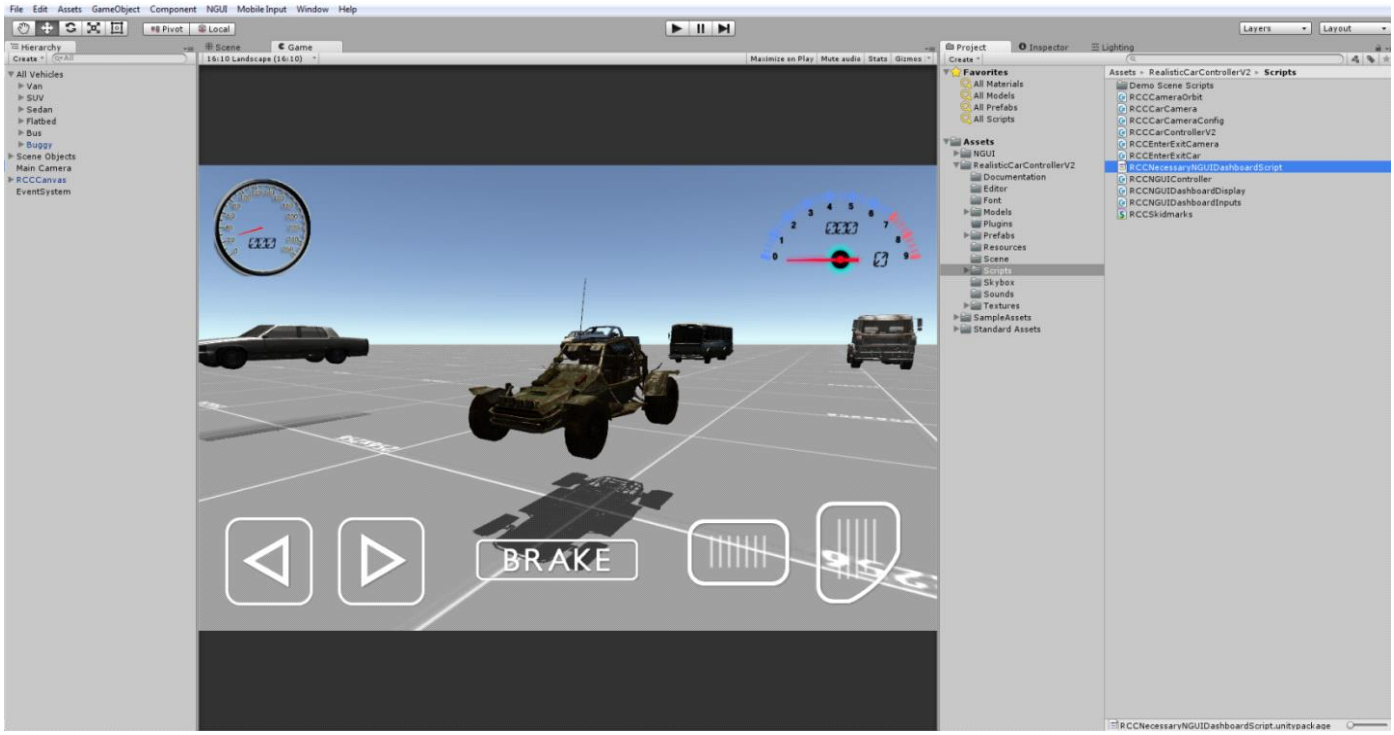
You can enable “Auto Find Mobile Buttons” bool, and let script find them automatically.



Runs perfectly with Unity Remote (Emulating to my android device). I forgot to add boost button, anyway, boost button is optional. Use it or not. Boost button will multiply your engine torque by 1.5x.

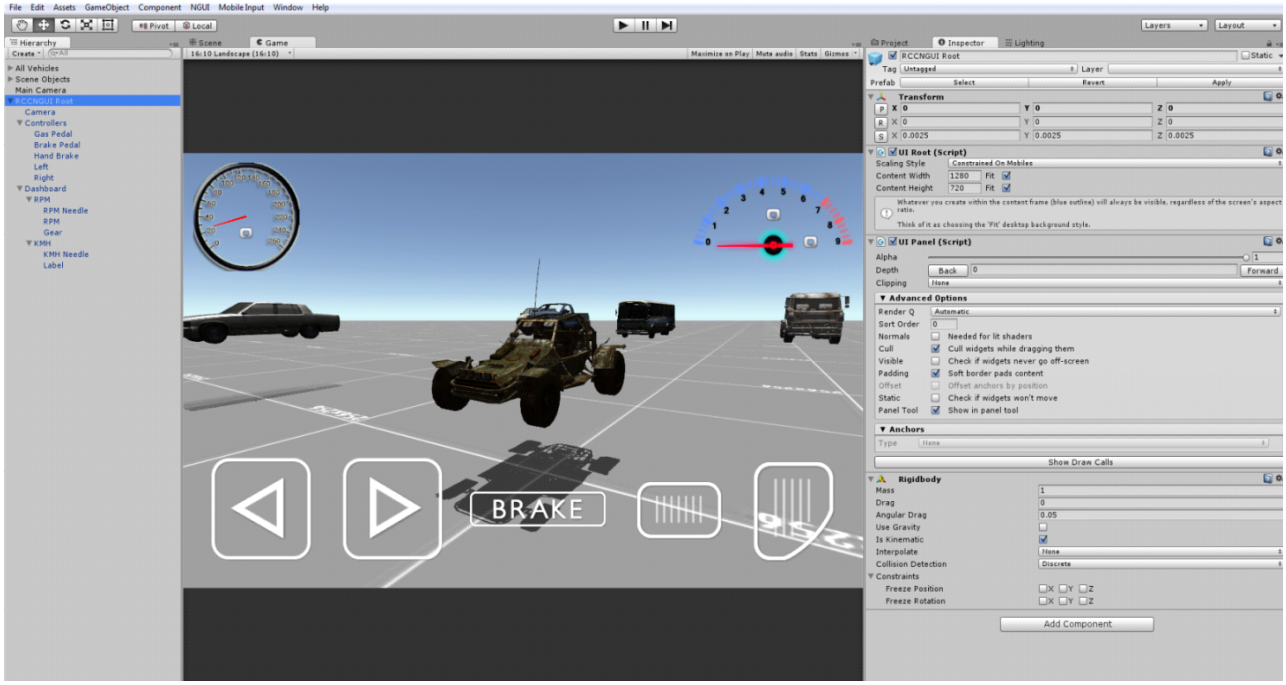
Mobile Controller (With NGUI)

First, import latest NGUI Package to your Project. Then, import "Necessary NGUI Dashboard Scripts"(under RealisticCarControllerV2/Scripts) to your Project;



You will find "RCCNGUIRoot" under RealisticCarControllerV2/Prefabs. Drag and drop the RCCNGUIRoot prefab to your Hierarchy.

This prefab includes NGUI Controller, NGUI Dashboard, and other necessary scripts for Ready to Use. Canvas is designed for all aspect ratios. Controller elements won't disappear on other aspect ratios or screen resolutions.

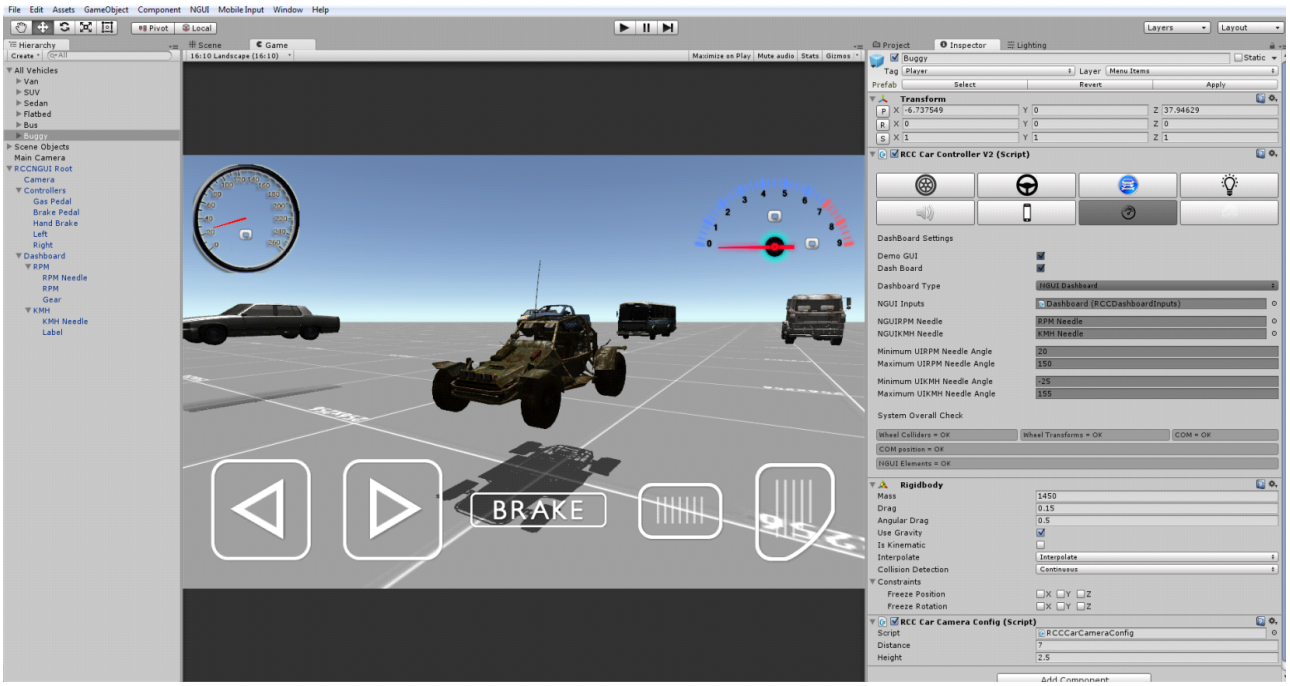


~~(Obsolete)Select all of your NGUI Controller elements inside editor script.~~

You can enable “Auto Find Mobile Buttons” bool, and let script find them automatically.

Dashboard Configuration

Just click the “Dashboard” tab, and enable “Dashboard”;



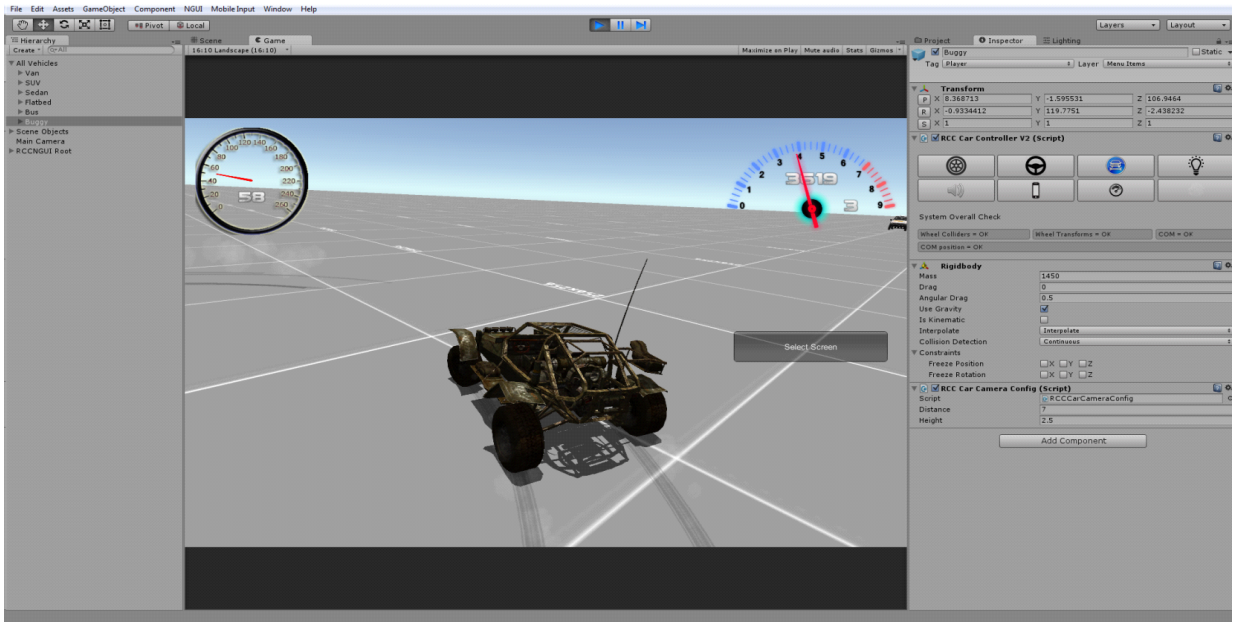
Default Dashboard Type is “UI Dashboard”. ~~These GUI elements are not UI Textures or Sprites like Mobile Controller Elements. Script is drawing them inside OnGUI() function. So, if you want to use your own sprites/textures, you have to change their pivot positions and rotation angles inside script. If you don’t want to mess with scripting, just use NGUI. NGUI Dashboard configurations are much more easy against writing your own dashboard inside OnGUI().~~

Well, as I said, this method has been removed in this version. UI (+4.6) will be used for future updates of the package. Script will access “RCCDashboardInputs” and “RCCDashboardDisplay” scripts for displaying dashboard. These scripts are attached on;

Unity UI - RCCCanvas root.

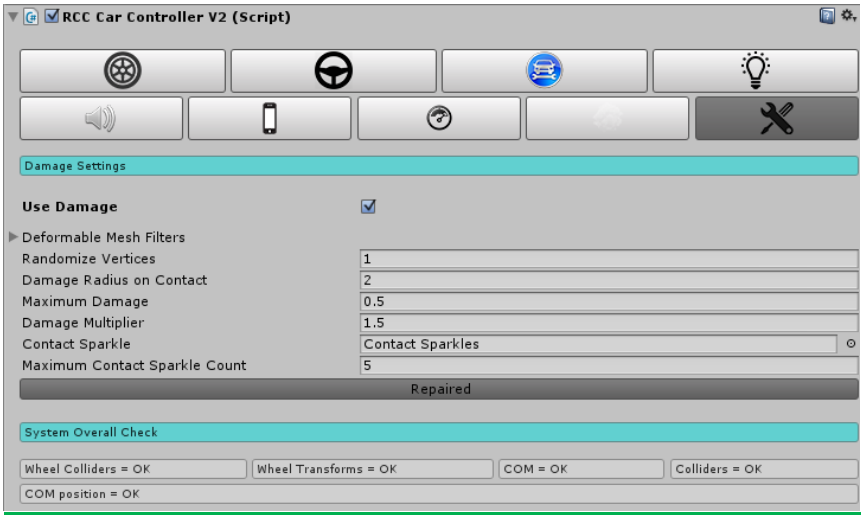
NGUI – RCCNGUI Root.

It’s extremely easy to create and customize your own dashboard and controller HUD on Unity UI and NGUI instead writing your own OnGUI() method.



Runs perfectly.

Damage (Based on Mesh Deformation)



Your vehicle body mesh wireframe topology must be reliable for realistic vertices movement. If your vehicle body mesh has broken (unwelded) vertices or bad wireframe topology, mesh will deform buggy and unrealistic.

Creating Lights, Sounds, Skidmarks, Smoke Effects

These effects are optional.

Create Point Lights for braking and reverse gear, spot lights for headlights. Place them correctly on your vehicle model. Click “Light” in editor script, and select all of your corresponding light.

Script doesn’t Instantiate, Destroy any smoke particles, or any kind of stuff. Just enabling/disabling particle emitters for avoid garbage memory.

You will find “WheelSlipAsphalt” and “WheelSlipSand” prefabs under Prefabs folder. You can use your own smoke prefab as you wish.

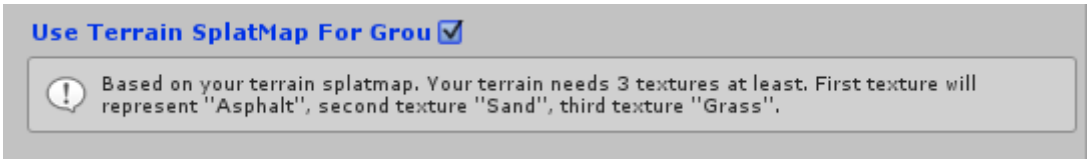
If you want to use exhaust effects, you will find "RCCExhaust" under Prefabs folder. You need to place it to your model correctly. Then select it inside editor script.

You will find "RCCWheelSkidmarks" under Scripts folder. Attach it to your all of your Wheel Colliders. Select your vehicle inside script. And scene must have "RCCSkidmarksManager". You will find the "RCCSkidmarksManager" prefab under Prefabs folder. Drag and drop to your Hierarchy.

Variable Ground Tire Grip

If you want to get variable tire grips on varied surfaces, use this option. Currently 3 surfaces available such as Asphalt(Default), Sand, and Grass. You will find "RCCGrassPhysics" and "RCCSandPhysics" Physic Materials under "Resources" folder. If your scene ground is not a Unity Terrain, and made my individual gameobjects, you have to assign each ground gameobject collider's Physic Material to corresponding one. For ex. Select your grass ground gameobject, and select it's Physic Material as "RCCGrassPhysics".

But if your scene has a Unity Terrain as a ground, your Terrain textures will decide which surface your on. Your terrain needs 3 textures at least. First texture will represent "Asphalt", second texture "Sand", third texture "Grass". Your default wheelcollider stiffness will be divided by 2 for grass, and 3 for sand. And don't forget to enable "Use Terrain SplatMap For Ground Physics" bool for your car.

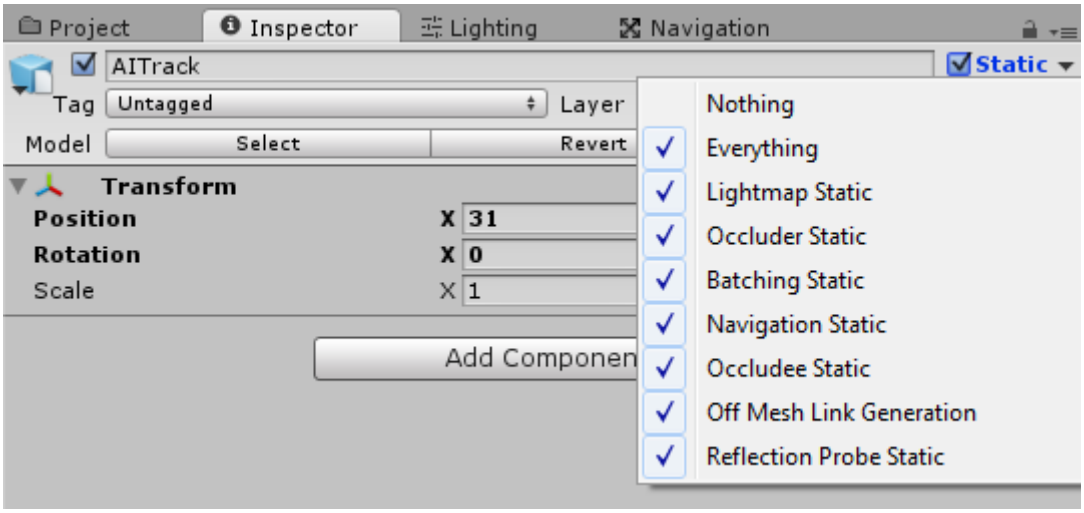


As i said, these are optional effects. If you don't want to use them, just leave.

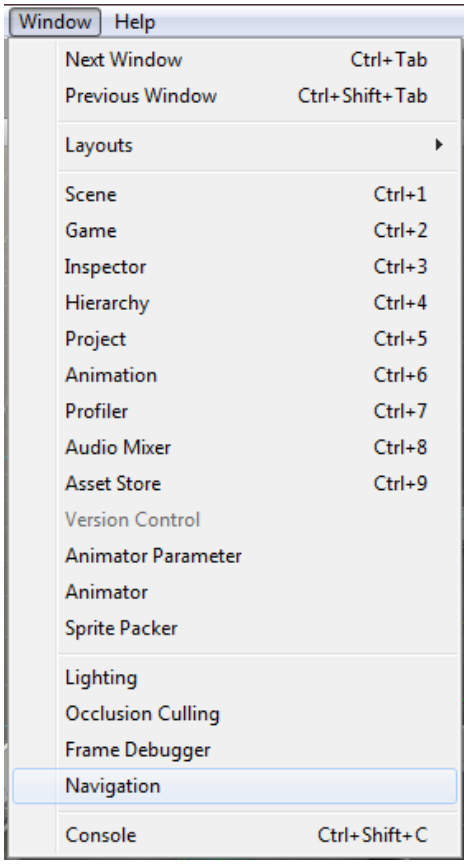
AI Configuration

Creating NavMesh For Scene

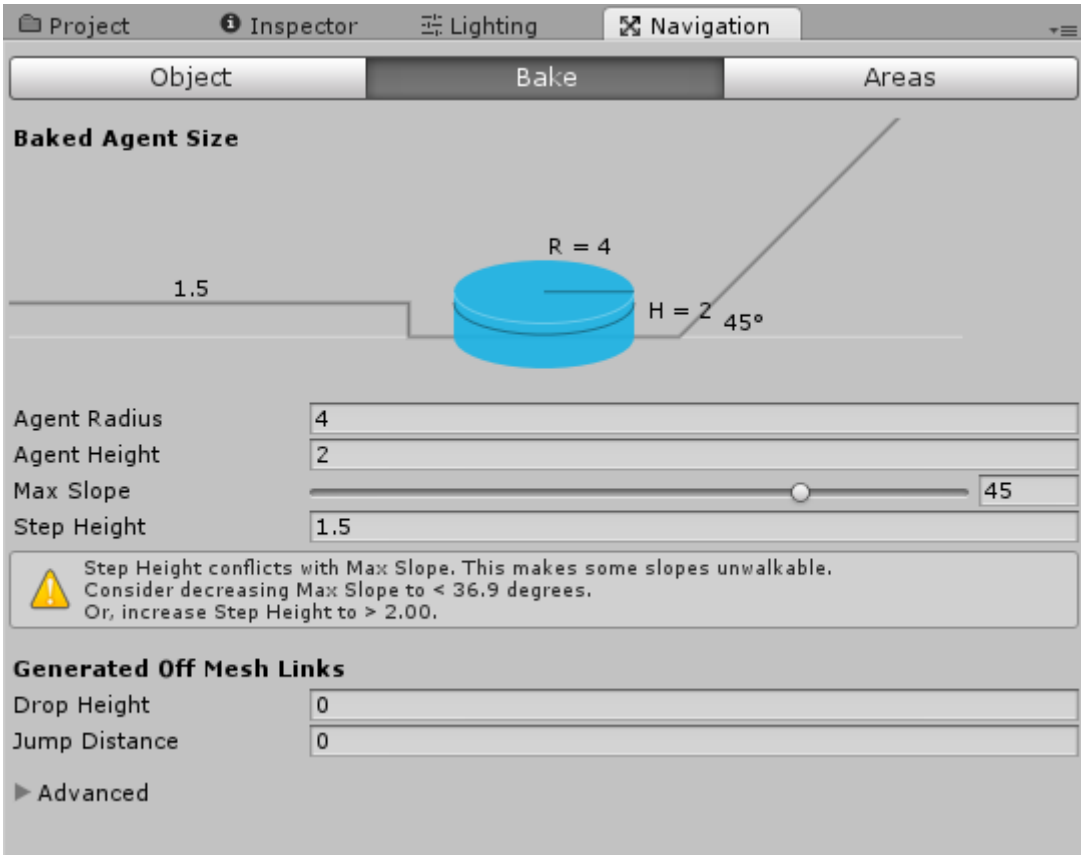
AI is based on Unity's Nav Mesh. Therefore, you must bake and create navigation mesh for your scene. Select your all static objects (including road too). And set them as "Static". Just like in AITrack Demo Scene;



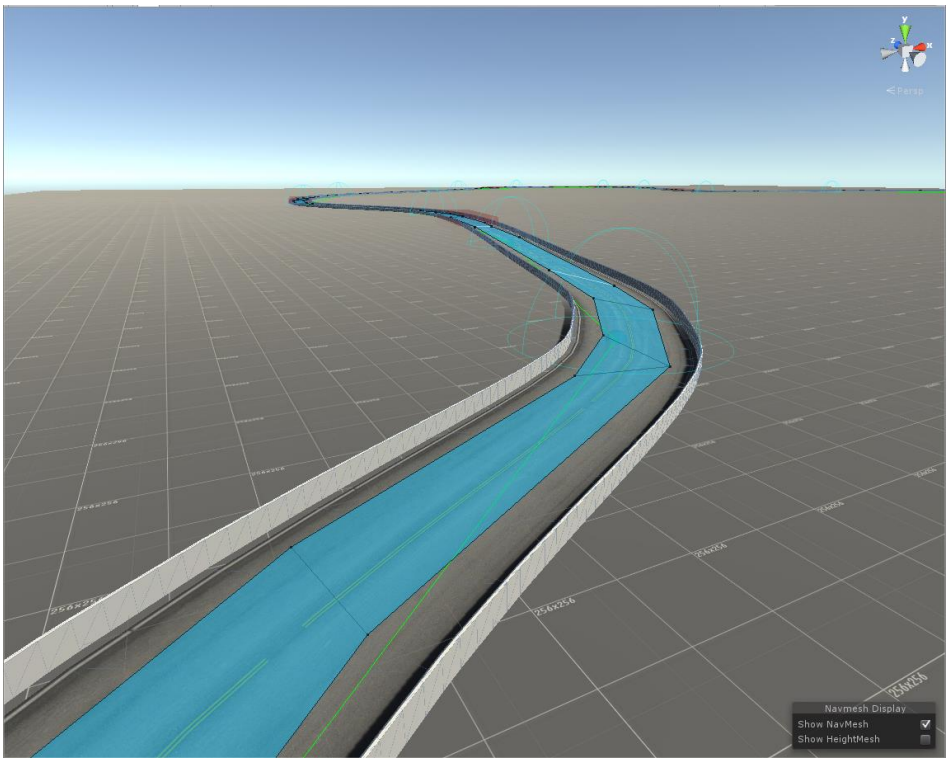
When all your static objects are marked as "Static", then you can bake your navigation mesh. Open "Navigation" window from Window → Navigation.



Default settings should be like this;

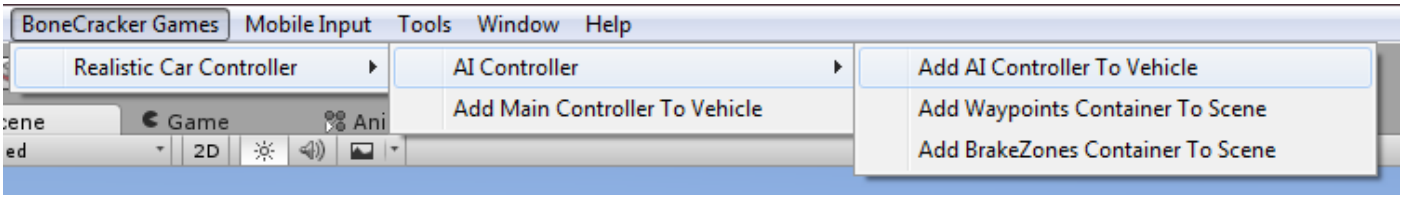


And then, click the bake button and bake your scene. Check your blue navigation mesh. Should be like this;

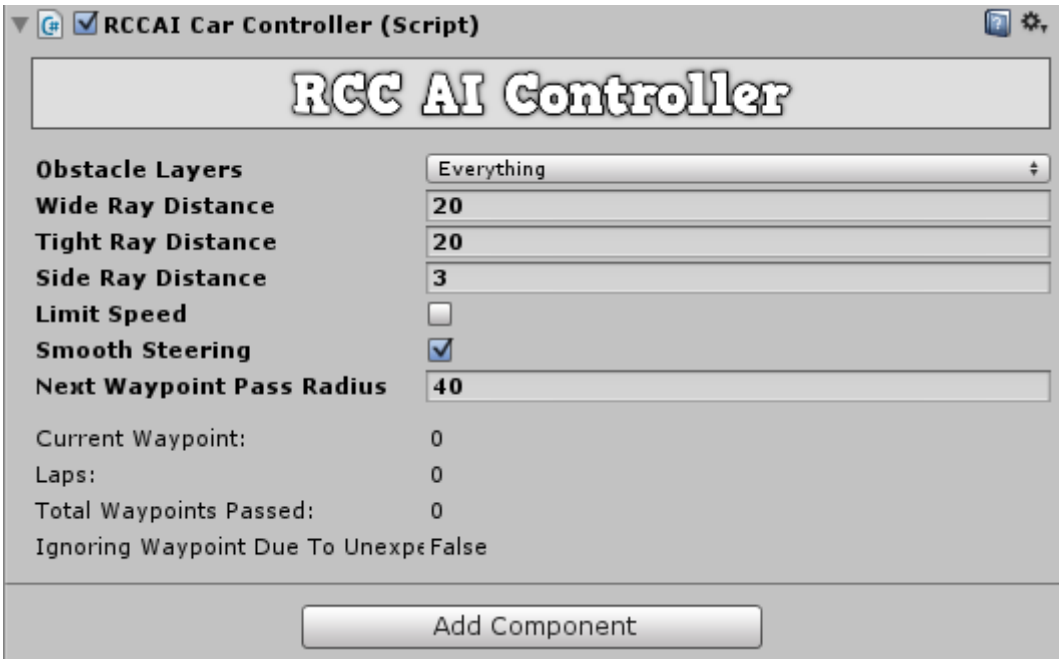


Adding AI Controller To Vehicle

First, build and configurate your vehicle. When everything works fine and results are as expected, you can add AI Controller to your vehicle by clicking “BoneCracker Games/AI Controller/Add AI Controller To Vehicle”

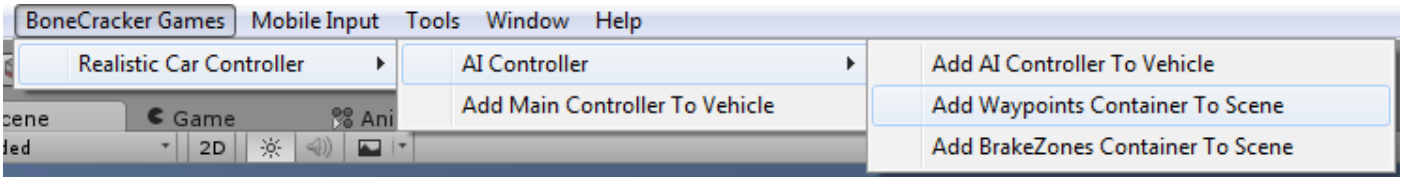


This will add “RCCAIController”to root of your vehicle.

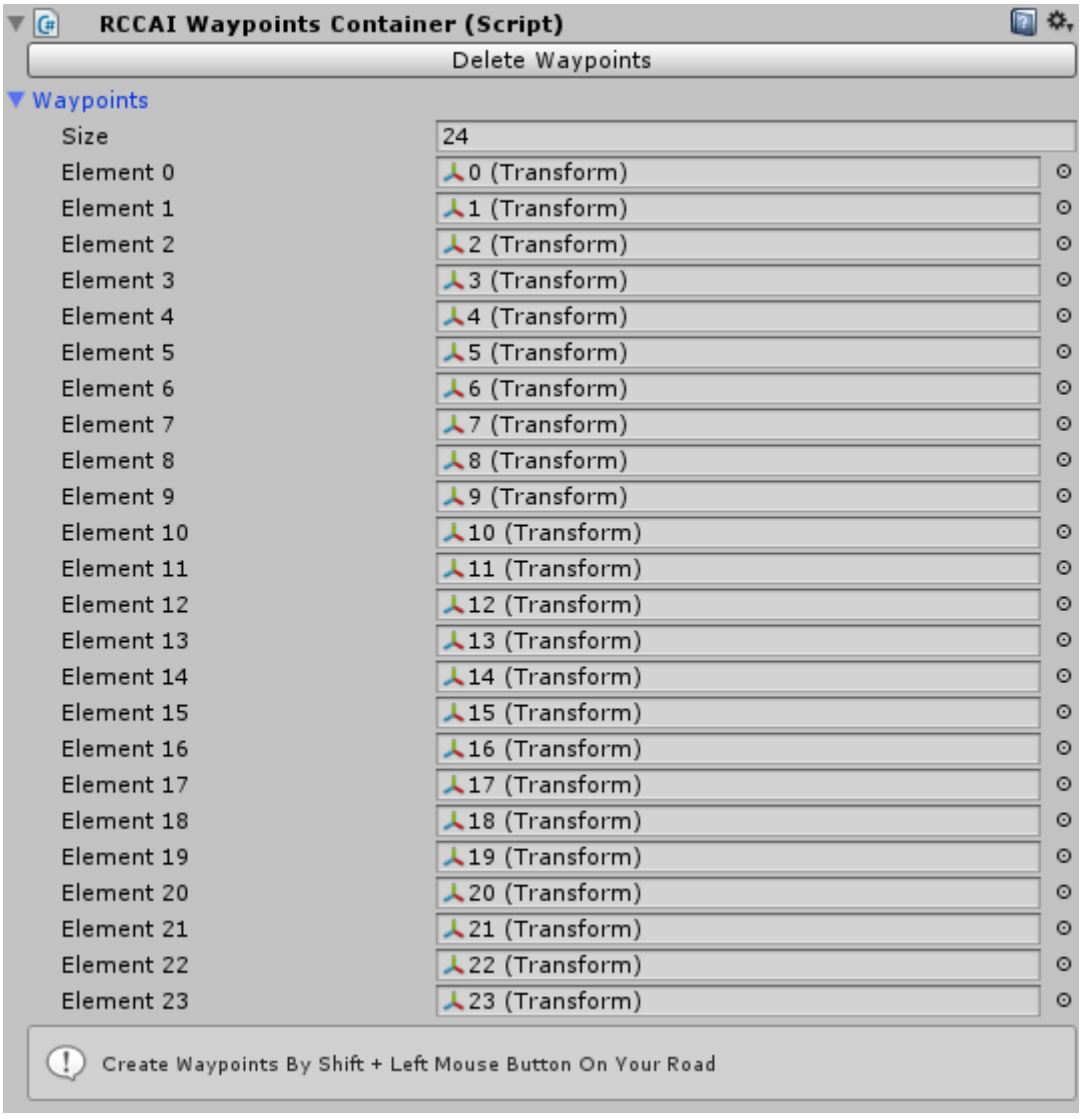


Vehicle will use “Nav Mesh Agent” for road path based on your waypoints, and will use raycasts for dynamic objects. If you have specified gameobjects for ignoring raycasts for this gameobject, you can select your gameobject layer from obstale layers.

Adding Waypoints Container To Scene

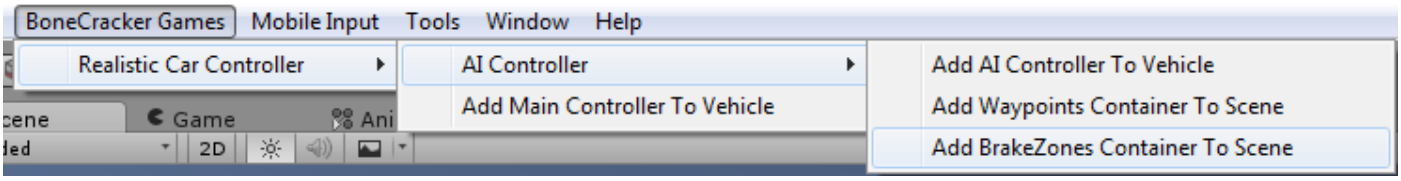


This will add "RCC AI Waypoints Container" to your scene. Simply hold Shift and click on your road to create a new waypoint. Create your path with them. Just like in the "AITrack Demo Scene";

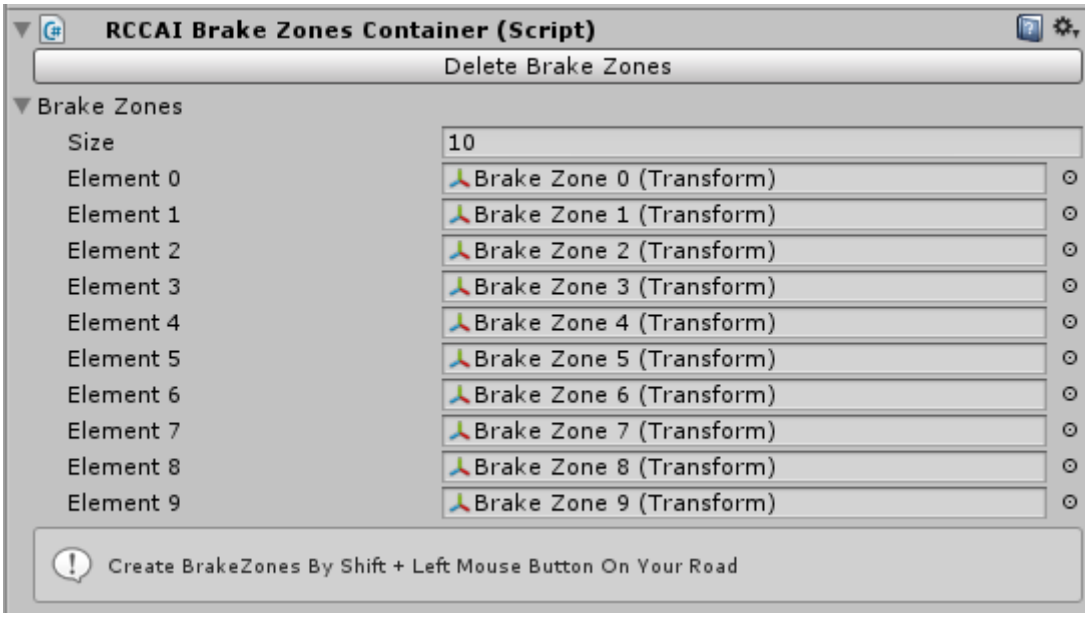


Info: Do not use CTRL+D for duplicate any waypoint.

Adding BrakeZones Container To Scene



This will add "RCC AI BrakeZones Container" to your scene. Simply hold Shift and click on your road to create a new brake zone. Just like in the "AITrack Demo Scene";

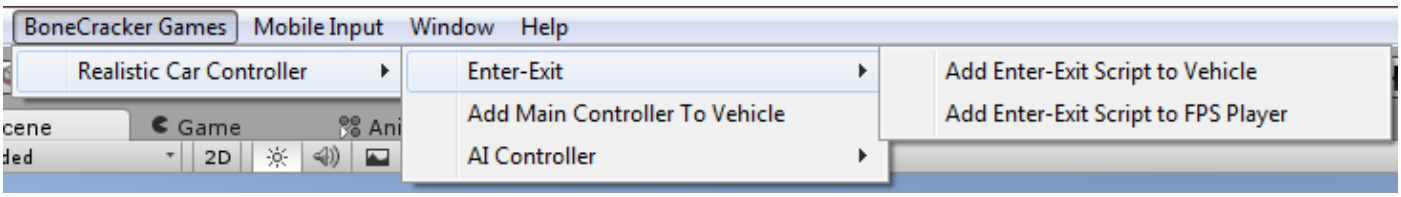


Info: Do not use CTRL+D for duplicate any brake zone.

Each brake zone has a target speed. Vehicle will adapt speed to this target speed when in this brakezone. You can scale your brakezones to fit to your road section.

Enter-Exit System

You can use your FPS or TPS player for enter-exit vehicles. All you have to do is, add necessary scripts to vehicle and player.



Get out positions are created automatically in script if you didn't select it in RCCEnterExitCar.

Credits

Extreme Vehicle Pack by Vertigo Games

Package contains sponsored vehicles by Vertigo Games. You can get this asset from this link;

https://goo.gl/jmRJCH

Sofie With Animations by BÜMSTRÜM

Driver Sofie, her animations, and her car model made by BÜMSTRÜM. You can access BÜMSTRÜM's asset store from this link;

https://goo.gl/lsgN2s

Sound Effects

All sounds in package are completely Royalt Free. You can use them on any personal or commercial projects.

License

You can use this package for unlimited games. Both personal and commercial use. But you can't resell or redistribute the package on any store. I got many reports from my customers about some fake developers are reselling my package on other stores. This is strictly forbidden. You can't resell or redistribute ANY asset from Unity's Asset Store, unless if developer gave you special license for making this. If anyone violates this, he will be banned, and his revenue from package sellings will be interrupted. You can read Unity EULA from this link;

http://unity3d.com/legal/as_terms

So, how you holding up there? You can ask me anything about my assets! If you want change minor things in the package, don't waste your time with editing scripts. Just tell me, I'll do my best with no cost. I don't take any Projects right now, and I'm not available for hire. I'm on multiple Projects at the same time. Please mail me if you used any of my Assets on your game. I'd like to see it in action!

Made by Buğra Özdoğanlar

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