Final Tank Track Simulator Manual

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1. The working principle of this Track Simulator

First of all, when creating tank model ,the tank's tracks are the skin which were binded with wheel bones,and each wheel bone's position is the same as its corresponding wheel model's position.

When game is running, each wheel collider generates the displacement relative to tank's vertical direction, then we record each wheel collider's current position, assigning this position information to its corresponding wheel model and wheel bone, that is to say, each wheel model's position and wheel bone's position are always the same as their corresponding wheel collider's position.

As we just mentioned in the beginning, the track skin is binded with wheel bones, when a wheel bone is generate displacement relative to tank's vertical direction, corresponding part of the skin which effected by this wheel bone will generate deformation.

As far as the rotation of wheel model, we calculate wheel colliders' average rotation speed on one side of the tank, and applied this rotation speed to each wheel model's rotation on this side of the tank.

As far as the rotation of tank track when tank is moving, in fact, is shifting the track texture Constantly. we calculate the offset speed of track's texture according to wheel colliders' average rotation speed, then assign the offset speed to this track material's texture.

2.What tank model is suitable for this Track

Simulator, and how do we bind bones for tank tracks to make tank models available to this Track Simulator?

Initially, The tank model which is available to this Track Simulator, must be properly separated from each other, that is to say, each wheel is a separated submodel, and the track on each side is also a separated submodel.

Further more, each separated submodel's axis should be set correctly.



Additionally, each track's mesh must be the skin mesh, and the wheel bones have been created at their corresponding wheel model's position, in other words, the position of each wheel bone which has been created must be exactly the same as its corresponding wheel model's position.



Finally, the weight value of the skin which effected by corresponding wheel bone should be adjusted properly.



4

3. The introduction about each configuration interface

of the track simulator component

(1). Adding or removing the Track Simulator component for the tank.

There are two options which were located in the top menu bar: Component/TrackSimulator/Add TrackSimulator , Component/TrackSimulator/Remove TrackSimulator.



When you select a tank in the view of hierarch, Clicking *Add TrackSimulator* option, the track simulator component will be added to this tank.

When the track simulator has been added to your tank, Clicking *Remove TrackSimulator* option, the track simulator component will be remove from this tank.

📆 🗸 Track Simulator (Script)		M \$,
🕨 Left Track Data		
▶ Right Track Data		
WheelFeaturesAnimationCurves		
> Adjust Parameters		
Mass Center Configuration		
Rigidbody MaxAngular Velocity		
Show Debug Information	V	

(2). Configuration interface of the track data

This configuration interface is used for configuring wheel models, wheel bones, creating wheel colliders according to their corresponding wheel model's position, and configuring track skinnedMeshRenderer etc.

We take the Left Track Data's configuration interface as an example.

① The area named *UpperWheelDataArray* is used for displaying and configuring the wheels which are locate in the upper position of the track.

The property named *Wheel Model* represents the transform component of wheel model;

The blue button named Add Upper Wheel Data which located in the bottom of this area is used for adding a row of new UpperWheelData's instance.

⁽²⁾ The area named *SuspendedWheelDataArray* is used for displaying and configuring the wheels which are located in the lower position of the track.

The property named *Wheel Model* represents the transform component of wheel model;

The property named *Wheel Bone* represents the transform component of wheel bone;

The green button named *Created WheelCollider* is used for creating the gameobject which will be added the wheel collider component, and initializing the parameters of wheel collider component.(when the wheel collider has been created successfully,the GUI of the green button named *Created WheelCollider* will be changed into a property named *Wheel Collider*, it will start to display the wheelCollider which has been created);

The red button named X which is located in the right side of each row is used for deleting the corresponding SuspendedWheelData instance, and destroying the corresponding wheel collider which has been created;

The blue button named Add Suspended Wheel Data which located in the bottom of SuspendedWheelDataArray's area is used for adding a row of new instance of SuspendedWheelData.

^③The area named *Track SkinnedMeshRender* is used for configuring the skin of the track

The property *Track SinnedMeshRender* displays the SkinnedMeshRender component of left track;

The red button named *Remove SkinnedMeshRender* which located in the bottom of this area is used for removing the current SkinnedMeshRender

eft Track Data	utor (seript)					10000-00
		UpperWhe	elDataArray:			
UpperWheelDat						
Wheel Model	UupLeftWheel0	(Transform)				0
UpperWheelDat	a 1:					
Wheel Model	upLeftWheel1	(Transform)				0
		Add Uppe	r Wheel Data			
		SuspendedW	/heelDataArray:			
SuspendedWhe	elData 0:					
Wheel Model	📕 left Wheel 💿	Wheel Bone	⊿leftBone0 ⊙	Wheel Collider	oleftWheel	۲
SuspendedWhe	elData 1:					
Wheel Model	leftWheel O	Wheel Bone	leftBone1 ⊙	Wheel Collider	eleftWheel	0
SuspendedWhe	elData 2:					
Wheel Model	🚽 leftWheel 💿	Wheel Bone	↓leftBone2 ⊙	Wheel Collider	eftWheel	٥
SuspendedWhee	elData 3:					
Wheel Model	None (Trar 📀	Wheel Bone	None (Trar O	Create Whe	elCollider	
SuspendedWhe	elData 4:					
Wheel Model	None (Trar ⊙	Wheel Bone	None (Trar 🔍	Create Whe	elCollider	
		Add Suspen	ded Wheel Data			
		Track Skinne	dMeshRenderer:			
Track SkinnedMes	hRenderer	尾 leftTr	ack (Skinned Mesh F	Renderer)		0

(3). The configuration interface of wheel collider's features curve

This configuration interface is used for configuring the features curve of the wheel collider:

The animation curve named *SingleWheelMortorAnimationCurve* represents the relationship between the rotation speed of the wheel collider and the motor torque of the wheel collider



The animation curve named *SingleWheelBrakeAnimationCurve* represents the relationship between the rotation speed of the wheel collider and the brake torque of the wheel collider



The animation curve named *SingleWheeSteerTorqueYAnimationCurve* represents the relationship between the rotation speed of the wheel collider and the steer torque that will apply to the Y axis of tank's rigidbody



The red button named *Reset All WheelFeaturesAnimationCurves* is used for resetting these animation curve's shape according to the default setting in the custom editor script

▼	WheelFeaturesAnimationCurves
	SingleWheelMotorAnimationCurve
	SingleWheelBrakeAnimationCurve
	SingleWheelSteerTorqueYValueAnimationCurv

(4). The configuration interface of correcting the track performance

When tank has been set up, if you find the offset direction of the wheel models and wheel bones is wrong, Or the rotation axis of the wheel model is not correct, or the offset direction of the track texture is mistake, we should adjust the parameters of this configuration interface to make the performance of tank's track become correct

(1) In the area which named *Wheel And Bone Transfrom Offset Configuration*:

The property named *OffsetDirection* is used for configuring the offset direction of wheel models and wheel bones, this offset direction must be on a certain axis of the wheel collider's gameobject: the x axis of the wheel collider's gameobject, the y axis of the wheel collider's gameobject, or the the z axis of the wheel collider's gameobject.

The property named InverseOffsetDirection is used for inversing the current offset direction of each wheel model and wheel bone.for example, if current offset direction of each wheel model and wheel bone is the Y axis of their corresponding wheel collider's gameobject, and the property named *OffsetDirection* is not checked, then the offset direction of each wheel model and wheel bone will not be changed.otherwise, the property named *OffsetDirection* is checked, then the offset direction and wheel bone is changed into the –Y axis of their corresponding wheel collider's gameobject, in other words, the offset axis is reversed.

The property named OffsetValue represents the size of the offset value along the offset direction of each wheel model and wheel bone.

(2) The area named Wheel Rotate Configuration is used for configuring the rotation

axis of the wheel model.

The property named *Rotate Axis* is used for selecting a certain axis of wheel model for wheel model to rotate around itself.

The property named *Inverse Rotate Direction* is used for inversing the current rotate axis of each wheel model, for example, if current rotate axis of each wheel is its X axis, when the property named *Inverse Rotate Direction* is not checked, the rotate axis of each wheel is not changed, otherwise, the property named *Inverse Rotate Direction* is checked, then the rotate axis of each wheel is changed into its –X axis, that is to say, the rotate axis is inversed

③ The area named *Track Texture Offset Configuration* is used for configuring the offset direction and offset speed of the track texture.

The property named OffsetDirection is used for configuring the offset direction of the track texture in the x direction or the y direction.

The property named inverseOffsetDirection is used for inversing current offset direction.for example, when the track texture current offset direction is x direction, and the property named inverseOffsetDirection is not checked, the track texture offset diection will not be changed, otherwise, the property named inverseOffsetDirection is checked, then the track texture offset diection is -X direction, that is to say, the offset direction is reversed.

The property named OffsetSpeedMultipliter represents the speed of track texture's offset.when the offset speed of the track's texture is not in harmony with the rotation speed of the wheel,by adjusting this parameters to make the offset speed of the track's texture is in harmony with the rotation speed of the wheel as much as possible.

🕶 Adjust Parameters		
Wheel And Bone Transform Offset Config		
OffsetDirection		
InverseOffsetDirection		
OffsetValue	0.25	
Wheel Rotate Configuration:		
Rotate Axis		
Inverse Rotate Direction		
Track Texture Offset Configuration:		
OffsetDirection		
InverseOffsetDirection		
OffsetSpeedMultiplier	1.73	

(5). The configuration interface of tank's mass center

This configuration interface is used for configuring the mass center of the tank .

Click the green button named Add Mass Center, it will automatically created a gameobject named Mass Center under the root gameobject of the tank, this gameobject 's position represents the position of tank's mass center.and its localPosition will be initialized to (0.0f, 0.0f, 0.0f).

▼ Mass Center Co	nfiguration	
Mass Center	None (Transform)	0
	Add Mass Center	

When the gameobject which represents the mass center has been created, the GUI of this area will be chaned.

The field named Offset is used for adjusting the gameobject's local position which represents the mass center of the tank relative to the root gameobject of the tank.

The red button named *Remove Mass Center* is used for removing the gameobject which represents the mass center, and destroying this gameobject

Mass Center		ransform)		
Offset	× 0	Y -1.5	Z -0.3	

(6). The configuration interface of tank rigidbody's max angular

velocity

This property is configuring the max angular velocity of this tank

Rigidbody MaxAngular Velocity

(7). The configuration interface of Debug Information's swtich

1

When this property is selected, the screen will display the moving speed of the tank, etc.

Show Debug Information

4. Using this Track Simulator to set up a new tank

(1)Adding Track Simulator component to tank's root gameobject

Selected the root gameobject of the tank, then click the option located in menu bar: Component/TrackSimulator/Add TrackSimulator, to add the Track Simulator component to tank.



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Tag Player		ayer Default		
Prefab Select		eveit	Apply	
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Rotation		Y 180		
Scale				
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Mass				
Drag				
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Is Kinematic				
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Collision Detection				
▶ Constraints				
■ Interpretex Simulator (S ■ Left Track Data ■ Right Track Data	cript)			n 🗘
WheelFeaturesAnimationCu	rves			
Adjust Parameters				
Mass Center Configuration				
Rigidbody MaxAngular Velo				
Show Debug Information				
	Add Compo	nent		

(2)Configuring the configuration Interface named Left Track Data and

Right Track Data

①Configuring the area named *Upper Wheel Data Array*:

Click the blue button named Add Upper Wheel Data to create two rows of UpperWheelData's instance.They are the UpperWheelData's instance named UpperWheelData0 and UpperWheelData 1

▼ 27 7 Track Sim ▼ Left Track Data	ulator (Script)		n 0.
		UpperWheelDataArray:	
		Add Upper Wheel Data	
		SuspendedWheelDataArray:	
		Track SkinnedMeshRenderer:	
Track SkinnedM	leshRenderer	None (Skinned Mesh Renderer)	0
V Left Track Data		UpperWheelDataArray:	
UnnerWheelDa	ata 0	opper wheelbataArray:	
	None (Transform)		0
Wheel Model	None (Transform)		0
		Add Upper Wheel Data	
		SuspendedWheelDataArray:	
		Add Suspended Wheel Data	

In the view of Hierarchy, separately dragging the wheels named upLeftWheel0 and upLeftWheel1 which are located in the upper position of the left track to the UpperWheelData 0's field named Wheel Model and the UpperWheelData 1's field named Wheel Model

🚝 Hierarchy	
Create -	
V 🕄 Demo*	
Terrain Directional Light FollowCamera	
body ▶ leftBones leftTrack ▶ leftWheels ▶ rightBones rightTrack ▶ rightWheels ▶ turrent ▶ upLeftBones ▼ upLeftWheels	
upLeftWheel0	
upLettWheel1	
▶ upRightBones ▶ upRightWheels	

▼ 7 Track Sime ▼ Left Track Data	ulator (Script)	n 0,
	UpperWheelDataArray:	
UpperWheelDa		
Wheel Model	upLeftWheel0 (Transform)	0
UpperWheelDa		
Wheel Model	JupLeftWheel1 (Transform)] 0
	Add Upper Wheel Data	
	SuspendedWheelDataArray:	
	Add Suspended Wheel Data	
	Track SkinnedMeshRenderer:	
Track SkinnedM	eshRenderer None (Skinned Mesh Renderer)	0

⁽²⁾Configuring the area named *Suspended Wheel Data Array*:

Clicking the blue button named *Add Suspended Wheel Data* to create 7 rows of new SuspendedWheelData's instance,their name are SuspendedWheel 0, SuspendedWheel 1, SuspendedWheel 2,SuspendedWheel 3,SuspendedWheel 4 SuspendedWheel 5, and SuspendedWheel 6.

7 1 Track Simu 7 Left Track Data	ılator (Script)		圖 �.
		UpperWheelDataArray:	
Wheel Model	JupLeftWheel0 (Transfo	rm)	0
	upLeftWheel1 (Transfo	rm)	0
		Add Upper Wheel Data	
		SuspendedWheelDataArray:	
		Track SkinnedMeshRenderer:	
Track SkinnedMe	eshRenderer	None (Skinned Mesh Renderer)	0

♥▼Track Simu ft Track Data	lator (Script)				8
		Upp	perWheelDataArray:		
	🚽 upLeftWheel0 (Tra	insform)			0
Wheel Model	JupLeftWheel1 (Tra	insform)			0
			d Upper Wheel Data		
		Suspe	endedWheelDataArray:		
	None (Transfo 🔍	Wheel Bone	None (Transfo 🛛	Create WheelCollider	
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Wheel Model	None (Transfo 🔍	Wheel Bone	None (Transfo 🛛	Create WheelCollider	
Wheel Model	None (Transfo 💿		None (Transfo 🛛	Create WheelCollider	

In the view of Hierarchy, selected the wheel models which were located in the lower position of the left track, their name are leftWheel0, leftWheel1, leftWheel2, leftWheel3, leftWheel4, leftWheel5, and leftWheel6

🖼 Hierarchy	â. . =≡
Create -	
🔻 🛠 Demo*	• * =
Directional Light	
FollowCamera	
M1A2	
body	
🕨 leftBones	
leftTrack	
▼ leftWheels	
leftWheel0	
leftWheel1	
leftWheel2	
leftWheel3	
lettWheel4	
lettWheel5	
leftWheel6	
🕨 rightBones	
rightTrack	
🕨 rightWheels	
► turrent	
▶ upLeftBones	
▶ upLeftWheels	
▶ upRightBones	
▶ upRightWheels	

Separately dragging them to the field:

SuspendedWheel 0 -> Wheel Model, SuspendedWheel 1 -> Wheel Model, SuspendedWheel 2 -> Wheel Model, SuspendedWheel 3 -> Wheel Model, SuspendedWheel 4 -> Wheel Model, SuspendedWheel 5 -> Wheel Model, SuspendedWheel 6 -> Wheel Model.

Track fire	ulator (Script)			
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Arrest Manual	. letterteettit	teris privers III	Rieger WREEKCHINN	
	and the state of t	Marrie Mastalia P	Treate Wide call der	

In the view of Hierarchy, selected the wheel bones which were located in the lower position of the left track, their name are leftBone0, leftBone1, leftBone2, leftBone3, leftBone4, leftBone5 and leftBone6.

🖼 Hierarchy		i +≡
Create -		
🔻 🕄 Demo*		
Directional Light		
▶ FollowCamera		
M1A2		
body		
▼ leftBones		
leftBone0		
leftBone1		
leftBone2		
leftBone3		
leftBone4		
leftBone5		
leftBone6		
leftTrack		
▶ leftWheels		
▶ rightBones		
rightTrack		
▶ rightWheels		
⊫ turrent		
▶ upLeftBones		
▶ upLeftWheels		
▶ upRightBones		
upRightWheel	S	

Separately dragging them to the field SuspendedWheel 0 -> Wheel Model,

SuspendedWheel 1 -> Wheel Bone, SuspendedWheel 2 -> Wheel Bone,

SuspendedWheel 3 -> Wheel Bone,

SuspendedWheel 4 -> Wheel Bone,

SuspendedWheel 5 -> Wheel Bone,

SuspendedWheel 6 -> Wheel Bone.

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		All the local strends and the		
		and Distance Mark Private and		

Separately Clicking the green buttons named *Create WheelCollider* which belong to their corresponding row to create 7 WheelColliders, and the names of these 7 WheelCollides are leftWheel0Collider, leftWheel1Collider, leftWheel2Collider, leftWheel3Collider, leftWheel4Collider, leftWheel5Collider, and leftWheel6Collider

Track Sim	ulator (Script)			1
		UpperWheelDataArray:		
UpperWheelDa	ata O:			
Wheel Model	🚽 upLeftWheel0 (Transform)			0
UpperWheelDa	ita 1:			
Wheel Model	JupLeftWheel1 (Transform)			0
		Add Upper Wheel Data		
		uspendedWheelDataArray:		
SuspendedWh	eelData 0:			
Wheel Model	🗾 leftWheel0 (🜼 Wheel Bone	e 🚽 leftBone0 (T 🔍	Create WheelCollider	
SuspendedWh	eelData 1:			
Wheel Model	💴 left Wheel 1 (💿 🛛 Wheel Bone	e 🗾 leftBone1 (T 🔍	Create WheelCollider	
SuspendedWh	eelData 2:			
Wheel Model	📕 left Wheel 2 (💿 🛛 Wheel Bone	e 🔰 leftBone2 (T 🔍	Create WheelCollider	
SuspendedWh	eelData 3:			
Wheel Model	🔎 leftWheel3 (🜼 Wheel Bone	: 🗾 leftBone3 (T o	Create WheelCollider	
SuspendedWh	eelData 4:			
Wheel Model	JeftWheel4 (🔍 Wheel Bone	: J:leftBone4 (T ⊙	Create WheelCollider	
SuspendedWh	eelData 5:			
Wheel Model	HeftWheel5 (🔍 Wheel Bone	: JeftBone5 (T o	Create WheelCollider	
SuspendedWh	eelData 6:			
Wheel Model	📕 left Wheel 6 (💿 🛛 Wheel Bone	e 🚽 leftBone6 (T 🔍	Create WheelCollider	
		dd Suspended Wheel Data		
	Tr	ack SkinnedMeshRenderer:		
Track SkinnedM	eshRenderer	None (Skinned Mesh Renderer)		0

Contract Simulator (Script)
 Left Track Data
 UpperWheelDataArray:
 UpperWheelData 0:
 Wheel Model @ upLeftWheel0 (Transform)
 OpperWheelData 1:
 Add Upper Wheel Data
 SuspendedWheelDataArray:
 Wheel Model @ upLeftWheel1 (Transform)
 Add Upper Wheel Data
 SuspendedWheelDataArray:
 Wheel Model @ leftWheel1 (Tran © Wheel Bone @ leftBone0 (Tran © Wheel Collider @ leftWheel2Collic @
 SuspendedWheelData 1:
 Wheel Model @ leftWheel1 (Tran © Wheel Bone @ leftBone1 (Tran © Wheel Collider @ leftWheel2Collic @
 SuspendedWheelData 1:
 Wheel Model @ leftWheel2 (Tran © Wheel Bone @ leftBone2 (Tran © Wheel Collider @ leftWheel2Collic @
 SuspendedWheelData 2:
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 SuspendedWheelData 3:
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 SuspendedWheelData 4:
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 SuspendedWheelData 5:
 Wheel Model @ leftWheel5 (Tran © Wheel Bone @ leftBone5 (Tran © Wheel Collider @ leftWheel3Collic @
 SuspendedWheelData 6:
 Wheel Model @ leftWheel5 (Tran © Wheel Bone @ leftBone5 (Tran © Wheel Collider @ leftWheel5Collic @
 Add Suspended Wheel Data
 Add Suspended Wheel Data

In the view of Inpsector, the 7 WheelCollider which have been created display below:

In view of the Hierarchy, the 7 WheelCollider which have been created display below:

= Hierarchy			mi:+≣
Create -			
🔻 🕄 Demo*			
Terrain			
Directional L	ight		
	ra -		
M1A2			
body			
▶ leftBones			
leftTrack			
⊨ leftWheels			
🕨 rightBone	S		
rightTrack			
🕨 rightWhee	s		
🕨 turrent			
⊨ upLeftBon	es		
⊨ upLeftWh	eels		
⊨ upRightBo	ines		
⊨ upRightW	neels		
🔻 LeftWheel	Colliders		
leftWhe	el0Collider		
leftWhe	el1Collider		
leftWhe	el2Collider		
leftWhe	el3Collider		
leftWhe	el4Collider		
leftWhe	el5Collider		
leftWhe	el6Collider		

In the view of Hierarchy, selected left track of the tank, dragging it into the field named TrackSkinnedMeshRender which belongs to the area named TrackSkinnedMeshRender

≔ Hierarchy				ii •≡
Create -				
▼ 🔩 Demo*				1. 1.
Terrain Directional Light ▶ FollowCamera				
M1A2				
body leftBones leftTrack leftWheels rightBones rightTrack rightWheels turrent upLeftBones upLeftWheels upLeftWheels upLeftWheels				
▶ upRightWheels ▶ LeftWheelColliders				
Track Simulator (Scrint)				1
V Left Track Data				
	UpperW	heelDataArray:		
				×
Wheel Model 🥥 upLeftWheel0 (Trans	form)			
Wheel Model JupLeftWheel1 (Trans	form)			0
	Add Up			
	Suspended	lWheelDataArray:		
Wheel Model 🚽 leftWheel0 (Trai 🔍	Wheel Bone	刘 leftBone0 (Tran 🛛 🌣		eftWheel0Collic ○
Wheel Model 🛛 🛃 leftWheel1 (Trai O	Wheel Bone	🤳 leftBone1 (Tran 🛛 🔍	Wheel Collider	leftWheel1Collic ◎
Wheel Model 🛛 📕 left Wheel 2 (Trai) O	Wheel Bone	🚽 leftBone2 (Tran 🛛 🌣	Wheel Collider	leftWheel2Collic ◎
				X
Wheel Model 🗾 leftWheel3 (Trai O	Wheel Bone	🥖 leftBone3 (Tran 🛛 🌣	Wheel Collider	oleftWheel3Collic ⊙
Wheel Model 🚽 leftWheel4 (Trai 🔍	Wheel Bone	JeftBone4 (Tran ⊙	Wheel Collider	oleftWheel4Collic ⊙
Wheel Model 🚽 leftWheel5 (Trai O	Wheel Bone	🌙 leftBone5 (Tran 🛛 🌣	Wheel Collider	oleftWheel5Collic ⊙
Wheel Model 🛛 🕹 leftWheel6 (Trai 🔍	Wheel Bone	🤳 leftBone6 (Tran 🛛 🍳	Wheel Collider	©leftWheel6Collic ⊙
	Add Suspe	nded Wheel Data		
	Track Skin	nedMeshRenderer:		
Track SkinnedMeshRenderer	🖪 leftT	rack (Skinned Mesh Rend	erer)	0
	Remove Track	SkinnedMeshRenderer		

The configuration interface named *Right Track Data* 's setting method is similar to the configuration interface named *Left Track Data*'s setting method.

■ Track Sim Left Track Data Right Track Data	nulator (Script)					•
		Upper\	VheelDataArray:			
Wheel Model	JupRightWheel0 (Tra	nsform)				٥
UpperWheelD						
Wheel Model	upRightWheel1 (Tra	nsform)				0
		Add U				
		Suspende	edWheelDataArray:			
Wheel Model	🛛 rightWheel0 (Tr 💿	Wheel Bone	🔍 rightBone0 (Tra 💿	Wheel Collider	● rightWheel0Coll	٥
Wheel Model	🕹 rightWheel1 (Tr 🛛 ©	Wheel Bone	⊿rightBone1 (Tra ⊙	Wheel Collider	⊙ rightWheel1Coll	0
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Wheel Model	LrightWheel5 (Tr 💿	Wheel Bone	🛡 rightBone5 (Tra 💿	Wheel Collider	O rightWheel5Coll	٥
Wheel Model	rightWheel6 (Tr 💿	Wheel Bone	刘 rightBone6 (Tra 🛛 🔍	Wheel Collider	⊚ rightWheel6Coll	0
		Track Ski	anedMeshRenderer			
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		Remove Track	SkinnedMeshRenderer			

(3) Configuring wheel collider features curve

Double click the animation curve named *SingleWheelMotorAnimationCurver* which located in the area named WheelFeaturesAnimationCurve,then the unity will pop up the animation curve editor.

Modifying the shape of the animation curve named *SingWheelMotorAnimationCurve* in the animation curve editor which has just been poped up.

(4) Configuring the mass center of the tank

In the area named *Mass Center Configuration*, Click the green button named *Add Mass Center*

It will automatically create a gameobject named *Mass Center* under the root gameobject of the tank, and initialize its local position to (0.0f, 0.0f, 0.0f). We set the value of this property named Offset to (0.0f, -1.5f, -0.3f)

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LeftWheelColliders	
▶ RightWheelColliders	
Mass Center	

Mass Center	Mass Center (Tra	nsform)		0
Offset	X 0	Y -1.5	Z -0.3	

(5) Adding collider to the body of tank

In the view Hierarchy, selected the gameobject named body, add the mesh collider to it, and checked the Convex option of the mesh collider.

(6) Adding Tank Controller component to tank

In order to use keyboard to drive the tank, we need to add the Tank Controller component to the root gameobject of the tank. The TankController script is located in this folder: Assets/Tracksimulator/Scripts

Selected the script named TankController, we drag it to the root transform of the tank

At this point the tank installation process has been completed.

5. Adjusting parameters after installation of a new tank

(1). Adjusting wheel models and wheel bones' offset value in vertical

direction relative to the root gameobject of tank

When tank's tracks have been set up,running the game,we found the track crossed the ground.

Here we adjust the field named OffsetValue to 0.25, this field named OffsetValue belongs to the area named *Wheel And BoneTransform Offset Configuration* which belongs to the Configuration Interface named *Adjust parameters*.

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	OffsetSpeedMultiplier	1.111111	
•	Mass Center Configuration Rigidbody MaxAngular Velocity Show Debug Information	5	

(2) Changing the offset direction of track's texture

When game is running, we found the offset direction of track's texture is wrong

Here, we change the field named offsetDirection to Y axis, this field named offsetDirection belongs to the area named Track Texture Offset Configuration which belongs to the configuration interface named Adjust parameters.

▼📅 🔽 Track Simulator (Script) ▶ Left Track Data		P \$,
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OffsetSpeedMultiplier	1.111111	
Mass Center Configuration		
Rigidbody MaxAngular Velocity		
Show Debug Information		

(3). Adjusting the offset speed of track's texture

When we running the game, we also find the offset speed of track's texture is not in harmony with the rotation speed of the wheels. Here, we adjusting the field named offsetSpeedMultipiler to 1.73, this field named offsetSpeedMultipiler belongs to the area named Track Texture Offset Configuration which belongs to the configuration interface named Adjust parameters.

▼ ▼ Track Simulator (Script) ► Left Track Data ► Right Track Data ► WheelFeaturesAnimationCurves ▼ Adjust Parameters		₩ \$,
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InverseOffsetDirection		
OffsetValue	0.25	
Rotate Axis		. ‡ 1
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OffsetDirection		41
InverseOffsetDirection		
	1.73	

Running the game, we can see the tank track's performance is correct now:

6.The video tutorial on youtube

https://youtu.be/u3Pla3QYQyc

7.Contact information

If you have technical difficulties, please contact me by email. My email address is 18311310080@163.com