

TrackSkull User Guide v2

LifeApe

Introduction

TrackSkull has helped many haunters create more realistic animatronic shows by allowing them record real-life motion. Everything that you record in TrackSkull can easily be imported into Brookshire Software's VSA, Light-O-Rama, or LifeApe's SceneBuilder for use on the ExtremeLife controller.

TrackSkull was developed as a tool to help the home haunters and professionals with their love of building 3-Axis skulls. The initial idea was to record input from a joystick and export this information to VSA. Since then, we've added support for the TrackIR motion capture system, real time output to most servo controller via "puppet mode", and other small tweaks and feedback systems. These additions have caused TrackSkull to go beyond being a simple tool and become a full-fledged software application.

As with all my software, TrackSkull will forever be an evolving application. Users are always welcome to submit ideas to me via email (nelson@lifeape.com) Enjoy!

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Overview

The image shows the TrackSkull software interface with several callout boxes pointing to specific features:

- Stop Recording / Playback**: Points to the Stop button in the top toolbar.
- Start Recording**: Points to the Record button in the top toolbar.
- Replay Recording**: Points to the Replay button in the top toolbar.
- Export Recording for use in VSA/LOR**: Points to the Export button in the top toolbar.
- Add Audio to playback while recording**: Points to the Add Audio button in the top toolbar.
- Camera Connect and Centering**: Points to the Camera section on the left sidebar, including Disconnect, Center, and Motion Ratio controls.
- Joystick Connect**: Points to the Joystick section on the left sidebar, including Connect and status indicators.
- Recording Time Adjustment (Improves sync...)**: Points to the Time Setting section on the left sidebar, including Sync with Audio and % Adjustment options.
- Camera and Joystick Filters / Smoothing**: Points to the Input Tweaks section on the left sidebar, including Head Tracking and Joystick filter settings.
- Record Time and Frame Count**: Points to the 0:00 | Frames 0 display at the bottom left of the interface.
- Servo Settings (channel, max, min, default)**: Points to the Servo Settings section in the bottom center.
- Puppet Mode section, (Controller Type, Port, Baud Rate)**: Points to the Puppet Mode section in the bottom center, including Controller, Port, and Baud Rate settings.
- Eye Color / Brightness Adjustment**: Points to the Eye Color/Brightness slider in the bottom right.
- Joystick Axis feedback**: Points to the Joystick Axis feedback sliders in the bottom right.
- Joystick Button feedback**: Points to the Joystick Button feedback checkboxes in the bottom right.
- TrackIR Camera Display**: Points to the central camera view showing a 3D model of a skull.
- Camera OR Joystick 3D feedback**: Points to the Source selection (Camera/Joystick) in the bottom right.

Input Devices

The following devices can be used for acquiring real-life positioning data that can be used by TrackSkull. The devices that are supported are the NaturalPoint TrackIR 4:Pro, TrackIR 5, and any Windows compatible USB joystick.

TrackIR Camera (Version 4:Pro OR Version 5)

The NaturalPoint TrackIR camera system consists of a special IR camera and reflective sensors you wear that captures your own heads position (up to 6 Degrees of freedom).



Installation:

Install the drivers and software that shipped with the TrackIR system. TrackSkull will access the camera via these drivers.

Next time you open TrackSkull, it will automatically detect and connect to the camera. If not, you can hit [Connect] from the "Camera" section on the left-hand side.

Attach the reflective sensors to your hat and stand/sit in front of the camera, you should see 3 dots within the TrackIR display within TrackSkull, these are the 3 reflective sensors on your hat.



Where to buy:

<https://amzn.to/2orxQkc> - Amazon: TrackIR 5

Joysticks

Any USB joystick that Windows recognizes should work with TrackSkull.

For example: [Logitech Extreme 3D Pro](#) (pictured on the left) or Logitech Attack 3 (on right)



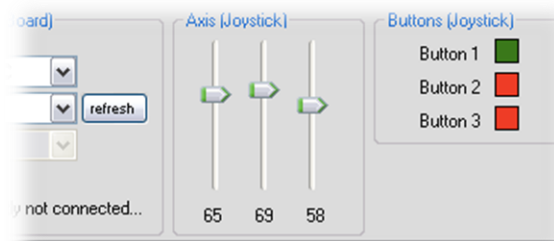
The advantage of the Extreme 3D is TrackSkull can utilize the "Twisting" handle action of the joystick rather than the throttle.

Installation:

Typically Windows will automatically detect and install native drivers for Joysticks. If you have any trouble, check with the joystick manufacturer for specific drivers.

Next time you open TrackSkull, it will automatically detect and connect to the Joystick. If not, you can click [Connect] from the "Joystick" box on the left-hand side.

You should see the 3 Axis and 3 boxes on the bottom right-hand corner within TrackSkull respond to your joystick movements.



Where to buy:

[Logitech Extreme 3D](#) – Great twist handle feature.

Filtering and Options

Using a Joystick or the TrackIR system sometimes doesn't give you the smoothest of motions. That's where filters come in!

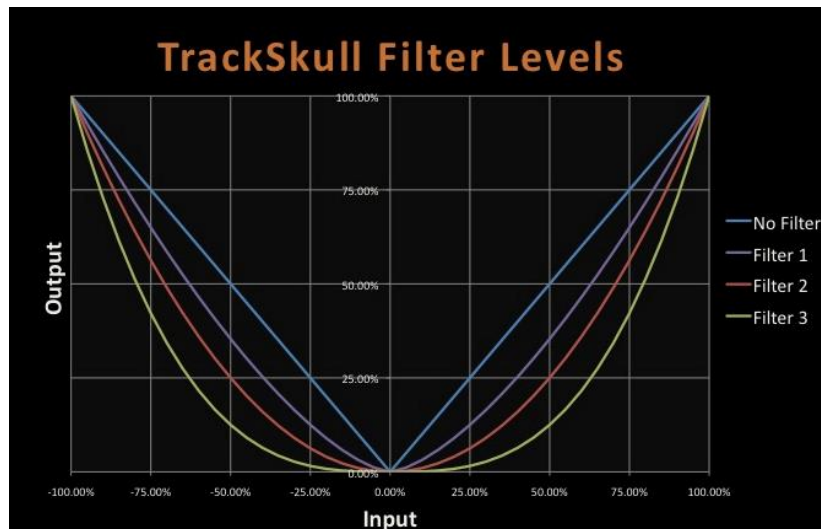
Centering (TrackIR only)

Centering is pretty simple. When using the TrackIR system, you need to tell TrackSkull what you consider "centered". In other words, what you want the default (or at rest) position of your head to be.

To do this, look straight ahead and hold still. Then click the [Center] button under the "Camera" box on the left-hand side. That's it!

Filtering

Filtering gives you the ability to have a more stable center position and more controlled movements. Filtering can apply to the TrackIR camera or joystick. There are 3 levels of filtering available. The picture below shows a representation of what is happening between the input (joystick or TrackIR) and what TrackSkull is using. This option can be found on the lower left-hand side.



For example: Filter level 3 requires you to move almost 20% before any movement is seen by TrackSkull.

Smoothing (TrackIR only)

To put it simply, this cleans up the output from the TrackIR system. If you experience any type of twitching or instability when using the TrackIR system, increasing Smoothing can help. This option can be found on the lower left-hand side.

On Screen Feedback

TrackSkull offers a few ways to see what is being outputted from the TrackIR system or joystick. These are to aid you on what will be exported to VSA or sent to your servo controller board directly.

TrackIR Display

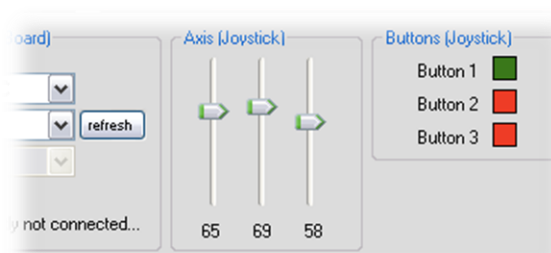
The TrackIR display will show you what the TrackIR camera is seeing. You should see 3 dots within the display; these are the 3 reflective sensors on your hat. If you see additional artifacts, the camera may be seeing other reflective surfaces or bright lights.



For best results, be sure to check that your head movements remain within the display window. If not, move back, away from the camera.

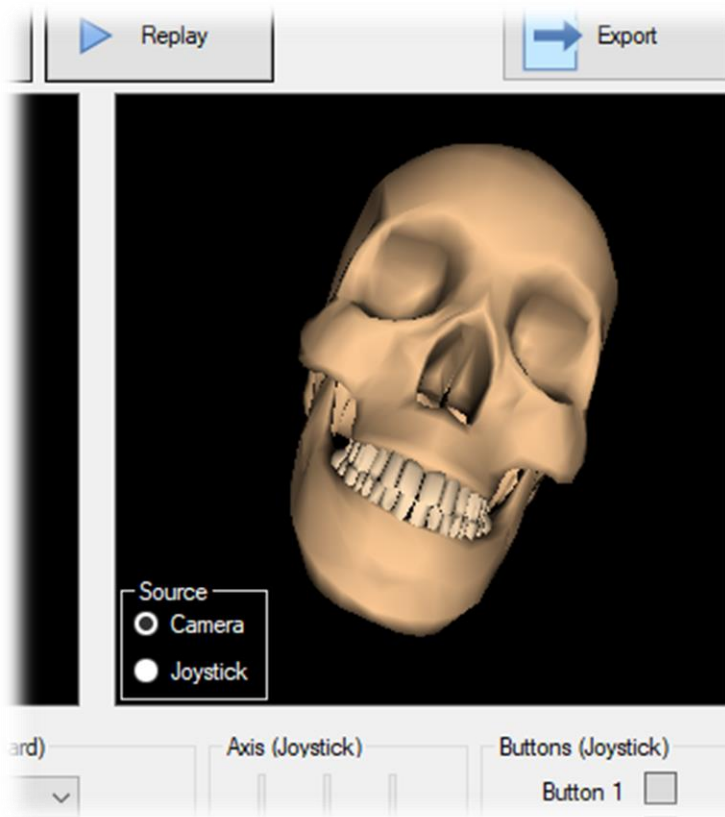
Joystick Feedback

You should see the 3 Axis and 3 boxes on the bottom right-hand corner within TrackSkull respond to your joystick movements.



3D Skull

The 3D skull represents the 3 axis of freedom; Nod, Tilt, and Rotate. This gives you a visual representation of how the 3 different axis interact with one another. The source of the 3D skull can come from either the TrackIR system or joystick. The selection can be made at the bottom left-hand side of the 3D skull box



Puppet Mode

Puppet Mode allows for you to control your servos directly from TrackSkull without having to first import a recording into VSA. Many users refer to it as “live” feedback.

For example, you can control a 3-axis skull by moving around a joystick or have it mimic your own head’s movements.

Setup

What you need to know:

- What type of servo controller (miniSSC, SSC32, DMX, etc...)
- How to access it (Com port, baud rate, etc...)
- The parameters of each servo (address, max, min, default positions)

NOTE: IF YOU ARE UNSURE, BUT HAVE VSA WORKING PROPERLY, YOU CAN FIND THESE SETTING THERE BY HITTING F3.

Controller Settings:

To setup “Puppet Mode”, select your Controller, Port & Baud Rate (if applicable)

The image shows two windows from the VSA software. On the left is the 'Puppet Mode (Live Output to a Servo Controller Board)' control panel. It features three dropdown menus: 'Controller:' set to 'SSC32', 'Port:' set to 'COM3', and 'Baud Rate:' set to '9600'. Below these is a 'Click to Connect' button. On the right is the 'Settings' dialog box, with the 'Device Settings' tab selected. It contains a table of servo configurations. A red box highlights the 'Type' column for the first two rows, both showing 'SSC32 Servo'. A yellow box highlights the 'Port' column for the same two rows, both showing 'COM3'. A green box highlights the 'Addr' column, showing '0' and '1'. A blue box highlights the '+Value' column, showing '2500' and '2500'. A purple box highlights the '-Value' column, showing '500' and '500'. A white box highlights the 'Default' column, showing '1500' and '1500'. A red arrow points from the 'SSC32' dropdown in the control panel to the 'SSC32 Servo' entries in the table. A yellow arrow points from the 'COM3' dropdown to the 'COM3' entries in the table. The text 'VSA Settings' is overlaid on the table.

Track	Name	Type	Port	Addr	+Value	-Value	Default	Color	
<input checked="" type="checkbox"/>	0	Nod	SSC32 Servo	COM3	0	2500	500	1500	Blue
<input checked="" type="checkbox"/>	1	Tilt	SSC32 Servo	COM3	1	2500	500	1500	Blue
<input type="checkbox"/>	2	Rotate	SSC32 Servo	COM3	2	2500	500	1500	Blue
<input type="checkbox"/>	3	Device #3	MiniSSC Servo	NONE	3	254	0	127	Blue
<input type="checkbox"/>	4	Device #4	MiniSSC Servo	NONE	4	254	0	127	Blue
<input type="checkbox"/>	5	Device #5	MiniSSC Servo	NONE	5	254	0	127	Blue
<input type="checkbox"/>	6	Device #6	MiniSSC Servo	NONE	6	254	0	127	Blue
<input type="checkbox"/>	7	Device #7	MiniSSC Servo	NONE	7	254	0	127	Blue
<input type="checkbox"/>	8	Device #8	MiniSSC Servo	NONE	8	254	0	127	Blue
<input type="checkbox"/>	9	Device #9	MiniSSC Servo	NONE	9	254	0	127	Blue
<input type="checkbox"/>	10	Device #10	MiniSSC Servo	NONE	10	254	0	127	Blue
<input type="checkbox"/>	11	Device #11	MiniSSC Servo	NONE	11	254	0	127	Blue
<input type="checkbox"/>	12	Device #12	MiniSSC Servo	NONE	12	254	0	127	Blue
<input type="checkbox"/>	13	Device #13	MiniSSC Servo	NONE	13	254	0	127	Blue
<input type="checkbox"/>	14	Device #14	MiniSSC Servo	NONE	14	254	0	127	Blue

Servo Settings:

To setup your servos, click the big button labeled [Servo Settings] under the Puppet Mode box.

You will need to 'enable' each axis or button of the TrackIR system or Joystick that you wish to use for sending position data to your servo controller.

Then set the Servo #, Minimum, Default & Maximum servo position value.

NOTE: IF THE SERVO IS RESPONDING IN THE REVERSE DIRECTION AS EXPECTED, CHECK THE "REVERSE" CHECKMARK FOR THAT SERVO.

Puppet Mode Options

Head Tracking Servo Parameters

Enable	Yaw (Y)	Pitch (P)	Roll (R)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Servo #	4	0	1
Minimum	250	250	250
Default	750	750	750
Maximum	1250	1250	1250
Reverse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Joystick Servo Parameters

Enable	Axis 1	Axis 2	Axis 3
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Servo #	5	7	6
Minimum	250	250	250
Default	750	750	750
Maximum	1250	1250	1250
Reverse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Buttons

Enable	Btn 1	Btn 2	Btn 3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Servo #	8	0	0
Normal	250	250	250
Pressed	1250	1250	1250

Power 'Relay' (Skulltronix BoC Only)

Enable Address # 8

BattleSwitch (Skulltronix BoC Only)

Enable Address # 38

Helmsman LINK (Coming soon...)

Enable Unit # 0

Eye Color (Skulltronix BoC Only)

Enable Bright/Strobe Addr # 23 Default value 140

OK

Be sure these servo limits are set properly to avoid burning out your servos.

Settings

Track	Name	Type	Port	Addr	+Value	-Value	Default	Color	
<input checked="" type="checkbox"/>	0	Nod	SSC32 Servo	COM3	0	2500	500	1500	Blue
<input checked="" type="checkbox"/>	1	Tilt	SSC32 Servo	COM3	1	2500	500	1500	Blue
<input checked="" type="checkbox"/>	2	Rotate	SSC32 Servo	COM3	2	2500	500	1500	Blue
<input type="checkbox"/>	3	Device #3	MiniSSC Servo	NONE	3	254	0	127	Blue
<input type="checkbox"/>	4	Device #4	MiniSSC Servo	NONE	4	254	0	127	Blue
<input type="checkbox"/>	5	Device #5	MiniSSC Servo	NONE	5	254	0	127	Blue
<input type="checkbox"/>	6	Device #6	MiniSSC Servo	NONE	6	254	0	127	Blue
<input type="checkbox"/>	7	Device #7	MiniSSC Servo	NONE	7	254	0	127	Blue
<input type="checkbox"/>	8	Device #8	MiniSSC Servo	NONE	8	254	0	127	Blue
<input type="checkbox"/>	9	Device #9	MiniSSC Servo	NONE	9	254	0	127	Blue
<input type="checkbox"/>	10	Device #10	MiniSSC Servo	NONE	10	254	0	127	Blue
<input type="checkbox"/>	11	Device #11	MiniSSC Servo	NONE	11	254	0	127	Blue
<input type="checkbox"/>	12	Device #12	MiniSSC Servo	NONE	12	254	0	127	Blue
<input type="checkbox"/>	13	Device #13	MiniSSC Servo	NONE	13	254	0	127	Blue
<input type="checkbox"/>	14	Device #14	MiniSSC Servo	NONE	14	254	0	127	Blue

OK Cancel

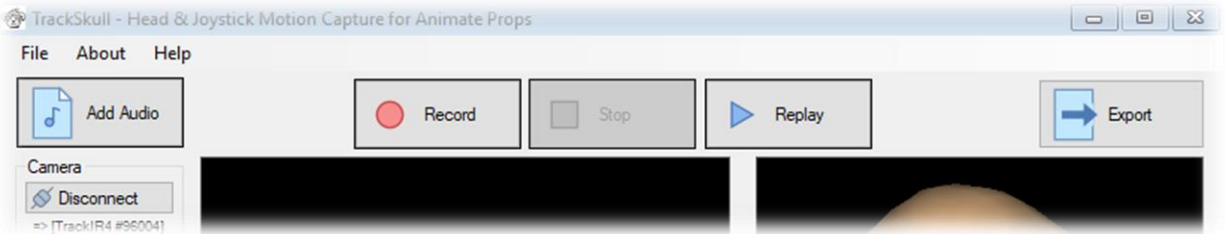
The [Power 'Relay' Setting] option is used when specific DMX controllers (such as the Skulltronix Board of Chuckee) have a specific address used to turn ON and OFF power to the servos. Consult your servo controller if this is required.

After setting up your servos, click [Connect] to connect to your servo controller.

Recording

Recording quite simply records the movements made with the TrackIR system or joystick. The recording can then be re-played in TrackSkull or exported for use in VSA.

Setup



To record your movements, click the large record button **[Record]**.

To stop recording, click the large stop button **[Stop]**.

To replay what you just recorded, click the large replay button **[Replay]**.

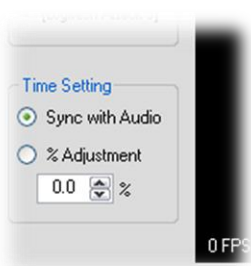
NOTE: IF YOU WISH TO USE "PUPPET MODE" WHILE RECORDING, MAKE SURE TO CONNECT TO YOUR SERVO CONTROLLER FIRST.

Audio

You can also play audio when recording to help you synchronize movements. To do this, simply click the [Add Audio] button and select the MP3 or Wave file you wish to use.

NOTE: IT IS BEST TO USE THE SAME AUDIO FILE THAT YOU WILL BE USING IN VSA (IF APPLICABLE) TO ENSURE PROPER SYNCHRONIZATION.

Adjustment



Occasionally recording can become out of sync. Such as, your movements will occur before or after the point in the audio where you wanted it to occur.

By using "Time Settings", we can help resolve these issues. See the chart below for an explanation.

Setting	Result
Sync with Audio {Default}	Rather than use your PC's internal clock to keep timing, we look at the play time of your audio to keep in sync with.
% Adjustment	Positive Percentage (%) = extended in VSA or TrackSkull Replay (slower) Negative Percentage (%) = shortened in VSA or TrackSkull Replay (faster)

Export Recording to VSA, LOR or SceneBuilder

Now that you've created a great performance, how do we get it out of TrackSkull and into VSA, LOR or SceneBuilder?

General

After your recording is complete, simply click the [Export] button in the upper right.

You will need to 'enable' each axis or button of the TrackIR system or Joystick that you wish to export from TrackSkull.

Then set the Track #, Minimum, Default & Maximum servo position value.

NOTE: IF THE SERVO IS RESPONDING IN THE REVERSE DIRECTION AS EXPECTED IN VSA, CHECK THE "REVERSE" CHECKMARK FOR THAT CHANNEL.

The screenshot shows the 'Settings' dialog box with the 'Device Settings' tab selected. A table lists devices with columns for Track, Name, Type, Port, Addr, +Value, -Value, Default, and Color. Track 2 is selected. Below the table, the 'Output file for Import into VSA, LOR, or LifeApe SceneBuilder' section is visible. It includes 'Output Type' (VSA selected), 'Head Tracking Parameters', and 'Joystick Parameters'. The 'Joystick Parameters' section shows 'Track' 2, 'Axis 1' checked, 'Axis 2' checked, and 'Axis 3' checked. The 'Output' section shows 'Track' 0, 'Bin 1', 'Bin 2', and 'Bin 3' settings. The 'VSA Export (or LOR or LAP) File Location' is set to 'C:\Users\baironse\Desktop\TS_Export.txt'. The 'Import Settings from Puppet Settings' button is also visible.

Track	Name	Type	Port	Addr	+Value	-Value	Default	Color	
<input checked="" type="checkbox"/>	0	Axis 1	SSC32 Servo	COM6	10	2500	500	1500	Blue
<input checked="" type="checkbox"/>	1	Axis 2	SSC32 Servo	COM6	11	2500	500	1500	Blue
<input checked="" type="checkbox"/>	2	Axis 3	SSC32 Servo	COM6	12	2500	500	1500	Blue
<input type="checkbox"/>	3	Device #3	MiniSSC Servo	NONE	3	250	0	127	Blue
<input type="checkbox"/>	4	Device #4	MiniSSC Servo	NONE	4	250	0	127	Blue
<input type="checkbox"/>	5	Device #5	MiniSSC Servo	NONE	5	250	0	127	Blue
<input type="checkbox"/>	6	Device #6	MiniSSC Servo	NONE	6	250	0	127	Blue
<input type="checkbox"/>	7	Device #7							
<input type="checkbox"/>	8	Device #8							
<input type="checkbox"/>	9	Device #9							
<input type="checkbox"/>	10	Device #10							
<input type="checkbox"/>	11	Device #11							
<input type="checkbox"/>	12	Device #12							
<input type="checkbox"/>	13	Device #13							
<input type="checkbox"/>	14	Device #14							

NOTE: IF YOU WERE USING "PUPPET MODE", YOU CAN USE THE "IMPORT SETTINGS" BUTTON TO COPY OVER YOUR PUPPET MODE SETTINGS.

IMPORTANT: MAKE SURE YOUR VALUES ARE EXACTLY THOSE OF VSA, IF NOT, A GENERIC IMPORT ERRORS WILL BE GIVEN BY VSA.