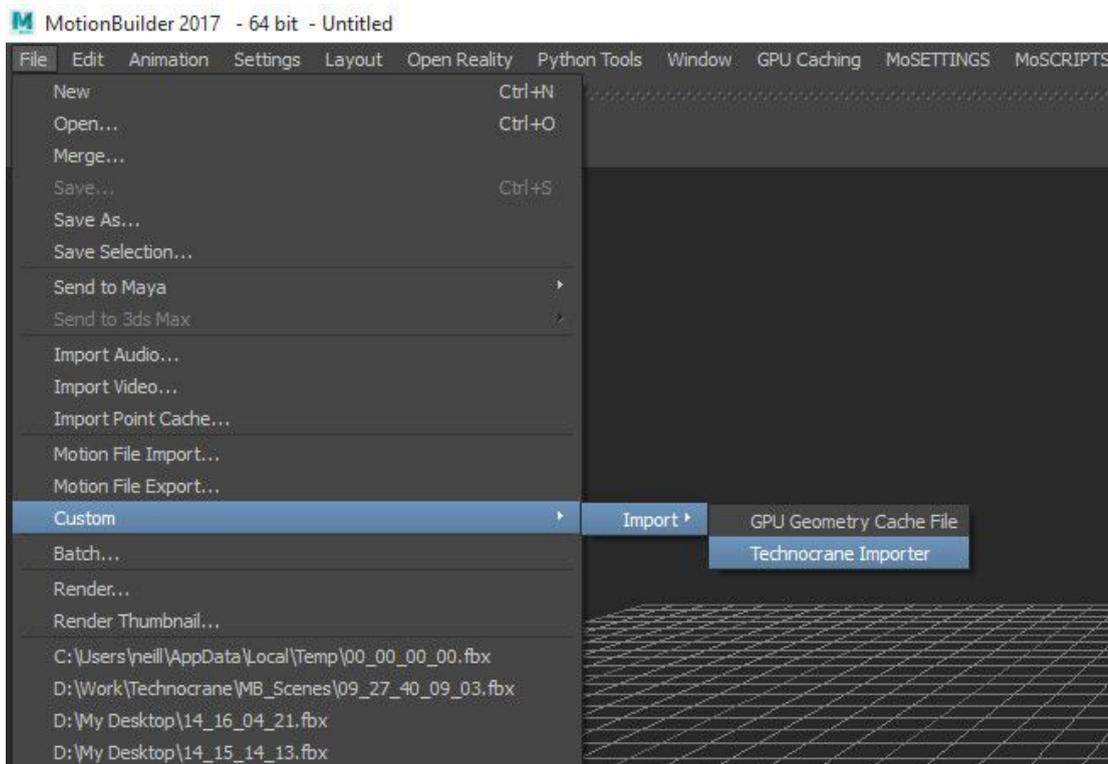# Technocrane Tracker plugin for Autodesk MotionBuilder

User Guide

Content

Installation

 Tracker plugin supports MotionBuilder version from 2014 up to 2018 and Windows x64 OS
only.
 Please use Installation package and follow instructions to setup the plugin.

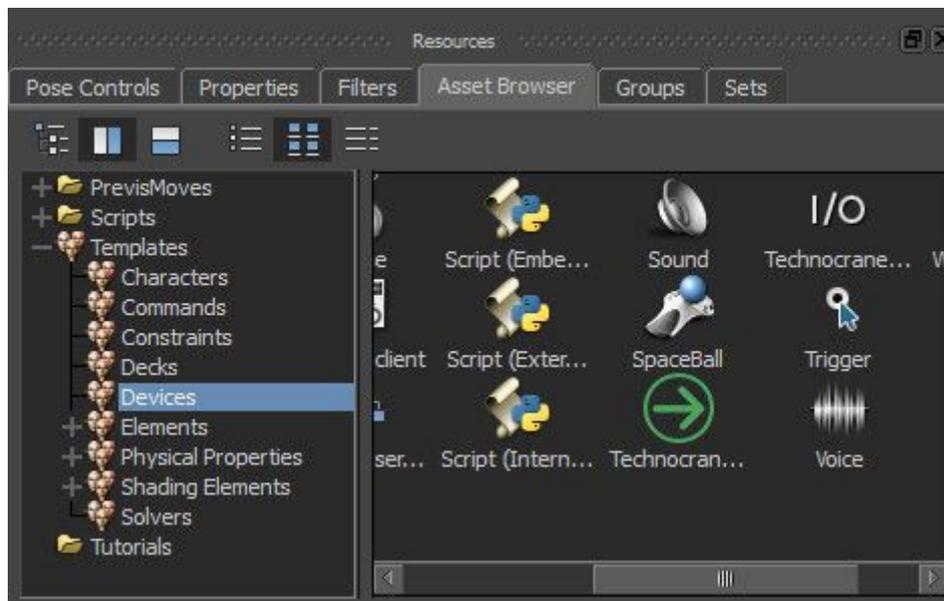# Technocrane Import

 Import Ascii or Binary CGI files.
Before doing the file import in Ascii format you should specify the correct frame rate in scene
Transport controls.
Binary format will use it's own timecode information to insert keyframes.

 Limitations
 - timecode is not supported in Ascii format

Technocrane Solver (Tracker)

Device tracker plugin that helps to receive and visualize data from a crane connected by serial wire.

Features

The main features compared to traditional device-look plugins
- Custom user friendly UI in Navigator window
- Quick start, auto connection and serial port selection, ready for recording just after creation
- special interactive HUD system
- auto-save camera data after each recording
- real-time crane model preview and parametric animation to follow a camera

Before Start

The tracker is easy to use. Simply drag'n'drop a Technocrane device from Assets into your viewport.
Navigator UI has a minimum set of options that needed to setup and use it. More advanced setup could be done within Property View.

Important Note! Technocrane Device is a Solver plugin. You can find it in Assets Devices as any other device, but when you put it into the scene, it will be located in the **Solvers** branch instead of Devices in a Navigator Window!

By default when you are adding a device, it tries to connect, as there is an auto connect feature on. It will choose a first available com port in your system and try to connect. If crane is connected to another com port, you can specify it by using an available port listbox.

And it will create a virtual camera as well with default name - Technocrane:Camera.

When device is connected, the Active property is checked. To turn offline, please turn off Active state.

Important Note! If you couldn't connect to a needed COM port, try to switch to Alternative mode before turning on Active state. You can locate the feature in property view window or by opening tracker Settings in Navigator UI.

Important! Before start working with a device, please specify a correct values for a camera frame rate and sensor width, height. That will help to have a right keyframes align and accurate calculation of a virtual camera FOV.

After each recording, solver will automatically save a new camera animation into a backup file. Name of a file will contain a first recorded frame timecode value. Backup files are saving into a temporary folder (by default windows temp folder), defined in property "Storage Path".

HUD

There is a special HUD system in a viewport top. That helps to see common streaming parameters.
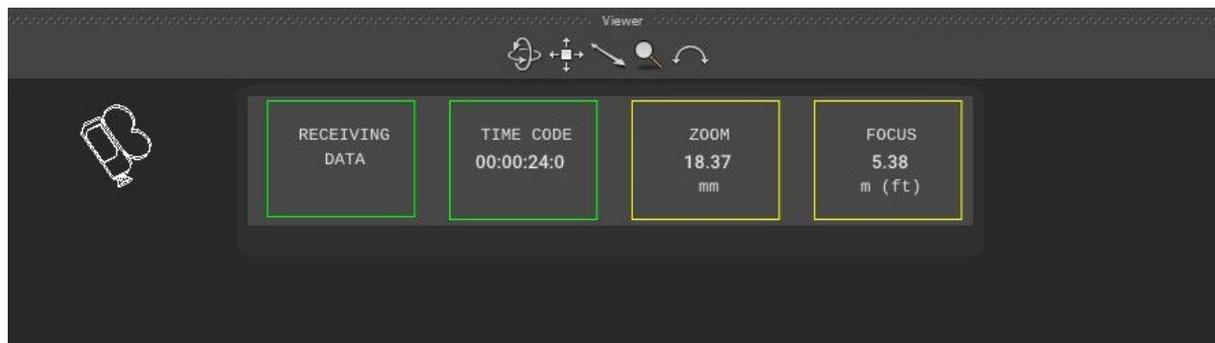
Crane Preview

Preview of a crane model is importing as a new namespace. The crane skeleton nodes are hidden by default. The crane nodes are driven by the Technocrane Tracker.

Preview nodes are driven from camera rotation and translation, and recording operation will put some keyframes. So that, after you turn off your streaming, you should see a crane model movement synced with a camera as well.

Setup for crane preview can be found in solver properties view or in solver Navigator UI.

Configuration Files

Plugin will store some of user values in a configuration file. You can locate the file in the <My Documents \ MB \ 20xx-x64 \ config \ <PC Name>.TechnocraneTracker.txt >

Crane preview models list and camera frame rate presets are stored in xml configuration file in motionbuilder config directory and called TechnocranePresets.xml

Navigator UI

Navigator UI is your fast access to solver common options that could be helpful for doing a quick setup and start making a live preview and recording. Upper toolbar has two buttons "Camera Setup" and "Crane Setup", that will show a propriate toolbar options for camera and crane. In a bottom rollout "Settings" there are controls to specify temp save folder and choose a connection method and port.

Camera Setup options.

Crane Setup options

If you would like to have a crane preview, choose your crane model from a list and optionally you can specify amount of tracks (that only in case that crane supports that). To turn off crane preview, just choose a "None" in the crane listbox.

Button "Select Root" will select a root null object of a crane model, so you can adjust a crane location in space on your needs.

To get an access to an advance plugin customization, use please Property View window.

Properties
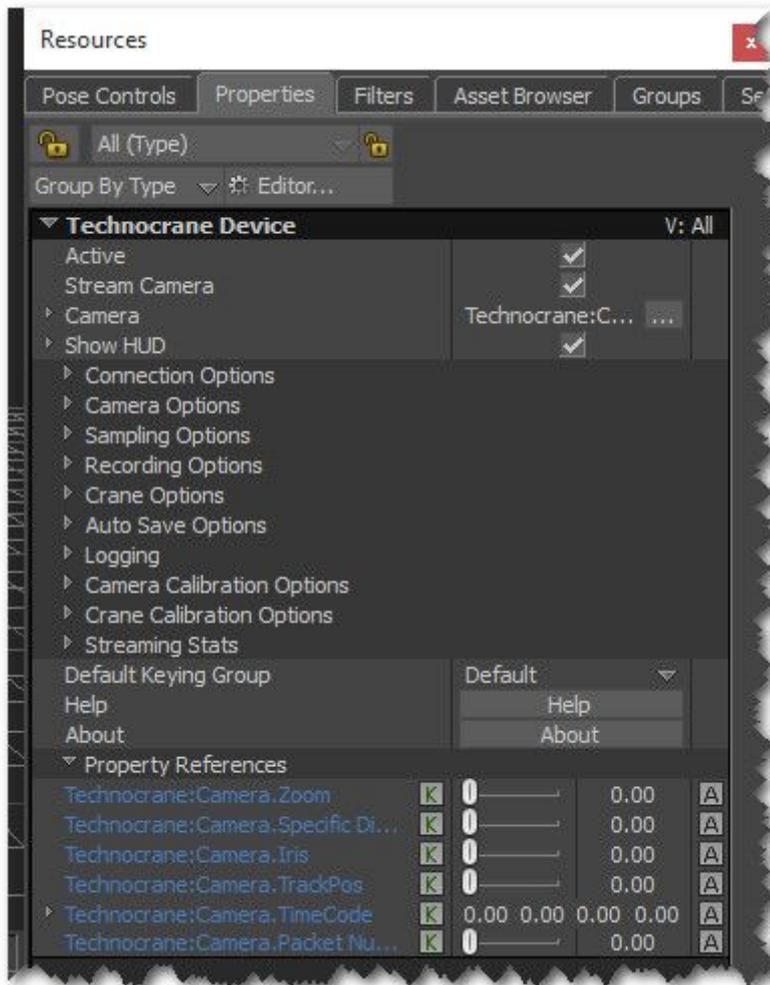
Active - switch between device online/offline mode

Stream Camera - switch between constraining camera by incoming packet or using existing keyframes. That could be helpful if you want to make just a parametric crane animation for already recorded camera movement.

Camera - current constraint camera

New Camera - create a new virtual camera and assign it as current

Show HUD - turn on/off a special HUD visibility

Show HUD Message Duration - this is time of HUD message showing up for the user

Connection Options

Auto Connect - connect just after device creation

Available Ports - list of ports connected to a system

Refresh - refresh a list of available ports

Alternative - flag to use another approach to work with COM ports

Camera Options

Units - specify type of units for the camera parameters
Sensor width - camera sensor width, used to calculate FOV
Sensor height - camera sensor height, used to calculate FOV

Sampling Options

Use TimeCode Frame Rate - use this option to switch between TimeCode Frame Rate or user specified Camera Frame Rate
TimeCode Frame Rate - read-only property to display incoming frame rate inside the timeCode value of a packet
Streaming Rate - read-only property to show up a number of packets per second received
Camera Frame Rate - user defined camera frame rate
Camera Rate Presets - presets for a user defined camera frame rate

Recording Options

Record Packets From Cache - When you turn off, tracker will capture all frames that you see in your viewport according to your evaluation time. It's less accurate, but could be useful if after recording you see a unordered virtual camera movement.
Record Relative Time - when off, then tracker will use incoming timecode values to put keyframes into global time space.
Use Absolute Time Range - flag to set timeline Start and Stop frames according to a global time space recording values. Helpful when Record Relative Time is off.

Crane Options

Camera Crane Presets - choose a crane model preview to display in a scene
Amount Of Tracks - number of rails under a crane preview model
Plot Crane Animation - use this option to record keyframes for a crane model inside a timeline range. This is useful when camera keyframes are exist and crane model keyframes are missing. Also to use camera animation keyframes instead of real-time input, use please Stream Camera option.

Auto Save Options

Storage Path - temp path where to put auto-saved files
Auto Save - checkbox to use or not to use auto save after each recording

Camera Calibration Options

Zoom Range - 2d vector, interpolate inside the range when technocrane zoom is not calibrated and incoming packet contains value in percentage.

Focus Range - 2d vector, interpolate inside the range when technocrane focus is not calibrated and incoming packet contains value in percentage.
Iris Range - 2d vector, interpolate inside the range when technocrane iris is not calibrated and incoming packet contains value in percentage.

Focus Scale - by default focus is converted from meters into cm (mult by 100) and connected to a camera Specified Distance to be used in DOF visual post-processing.

Crane Calibration Options

Camera Pivot Offset - local camera offset that will be used as a crane attachment point
Roll Pivot Offset - stabilization option, center of roll rotation, that will be used to unrotate camera and keep only physical camera translation for a crane attachment point
Tilt Pivot Offset - stabilization option, center of tilt rotation, that will be used to unrotate camera and keep only physical camera translation for a crane attachment point
Pan Pivot Offset - stabilization option, center of pan rotation, that will be used to unrotate camera and keep only physical camera translation for a crane attachment point
Calibrate Pan Offset - press first time to enter calibration mode and second time to stop it. From receiving samples during calibration process the Pan Pivot Offset will be calculated
Calibrate Tilt Offset - press first time to enter calibration mode and second time to stop it. From receiving samples during calibration process the Tilt Pivot Offset will be calculated

Crane Calibration Reset - reset offset values to default
Crane Calibration Save - save offset values into a xml file
Crane Calibration Load - load offset values from a xml file

Stabilize Crane - turn on/off crane stabilization mode (extracting camera rotation and keep only physical translation)
Stabilize Crane Debug Display - turn on/off some helpful elements for stabilization

FAQ

Q: How do I kill the status window on the screen?
A: To control a visibility of a new HUD, please use a Show HUD property (I've attached a screenshot). Also once you have changed that value to off, next time you add a new device, it will not show you a HUD any more. Your change will be saved into MB config ini file as a default value.

Q: I have a serial wire connected to a com port, but plugin couldn't connect to it. What should I do ?
A: On some machines the legacy way to connect to com port doesn't work. In that case you can try an alternative way of a connection. For doing this, please turn on "Alternative" flag in Navigator UI Settings or in Property View for a selected Tracker.
Q: I see a slight movement of the crane model even I just tilting the camera head. Why?
A: The model of the crane is an approximation. But the recorded camera move in MotionBuilder is lined up perfectly with the real camera move.
Q: I'm not able to connect and I have a crash on my TD desk when using a new tracker. Why it could be ?
A: In case you are complain about not being able to connect, it turns out using a gender swapper on the serial cable is what was crashing the TD desk

Support and contact

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