Rigging

DUIK

Animation

DEVELOPPER GUIDE

libDuik 15 reference - Nicolas Dufresne

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INTRODUCTION

libDuik is a complete library of objects, attributes and methods from Duik – Duduf IK & Animation Tools for After Effects. It allows you to easily include Duik functions into other scripts.

License

Duik and libDuik are licensed under the GNU-General Public License version 3. This means they are free software, which offers four freedoms:

- the freedom to use the software for any purpose,
- the freedom to change the software to suit your needs,
- the freedom to share the software with your friends and neighbors, and
- the freedom to share the changes you make.

The complete source code along with a copy of the license of Duik and libDuik is available at: https://github.com/Duduf-dev/Duik/

This license does not allow you to use libDuik in a non-free or commercial software. Any software using libDuik should be licensed under a free software license. See http://www.fsf.org for more information

Note: You can open the preferences dialog in your scripts with: *app.executeCommand(2359)*; but the user will have to check the box itself.

Note: if libDuik was not able to update *presetEffects.xml*, it will default **Duik**.*usePresets* to ***true***. If *presetEffects.xml* is up-to-date, **Duik**.*usePresets* will be ***false*** by default.

Including libDuik in your scripts

There are three ways to use libDuik in your scripts:

- ***#include «libDuik.jsxinc»***

Adding this line at the beginning of the script automatically loads libDuik at first run of the script. *libDuik.jsxinc* must be in the same folder as your script.
This is the recommended way of including libDuik.

- **Copying all content of libDuik.jsxinc in the beginning of your script**

Copying the whole library inside your script allows you to deploy only one file.

- **Renaming *libDuik.jsxinc* to *libDuik.jsx* and move it to Scripts/Startup/**

libDuik will be loaded during After Effects startup, and will then be available to all scripts. This is a good way to use Duik functions in severeal scripts without having to include libDuik in all scripts.

Note: if *presetEffects.xml* is not updated with libDuik pseudo effects, when using presets After Effects may warn for missing effects. libDuik will work well anyway.

Installing libDuik

- **Using pseudo effects**

This is the default behaviour, and you should prefer to use libDuik this way.

The pseudo effects are defined in the file named *presetEffects.xml* in the installation folder of After Effects, so libDuik needs to have its own pseudo effects written in this file. **The easiest way to install those pseudo effects is to install Duik using the installer provided at *http://www.duduf.net***

At first launch, libDuik will automatically check if the pseudo effects it needs are already installed, and, if not, it will attempt to install them, by writing them in the file called *presetEffects.xml* inside the installation folder of After effects.

To achieve this, **libDuik needs to be allowed to write files** by After Effects. The only way to do this is for the user to check the box called « Allow scripts to write files… » in the general preferences of After Effects. After Effects may have to be run with administrator privileges to edit *presetEffects.xml*.

After the very first run of libDuik, if the pseudo effects were not already available, the user will have to restart After Effects for the pseudo effects to be loaded by After Effects.

You can also manually add the pseudo effects to *presetEffects.xml*: Copy/paste the content of the file Duik_presetEffects.xml distributed with libDuik, in *presetEffects.xml*, just before the last line « </effects> ».

Note that on Mac OS you will have to change the file permissions to be able to modify it.

- **Using presets**

If you cannot modify *presetEffects.xml*, or for any other reason, you can use *.ffx* presets.

You just have to set *Duik.usePresets* to *true*.

By default, libDuik will look for *.ffx* files inside its own folder. You can specify another folder by setting the path to *Duik.presetPath* with an ending « / ».

The *.ffx* files must be named after the corresponding pseudo effects matchNames plus the extension (*.ffx*). A complete list of those matchNames is available in this document.

Using libDuik

Once libDuik has been loaded, all its classes, attributes and methods are available in the javascript object *Duik*, for all scripts run by After Effects.

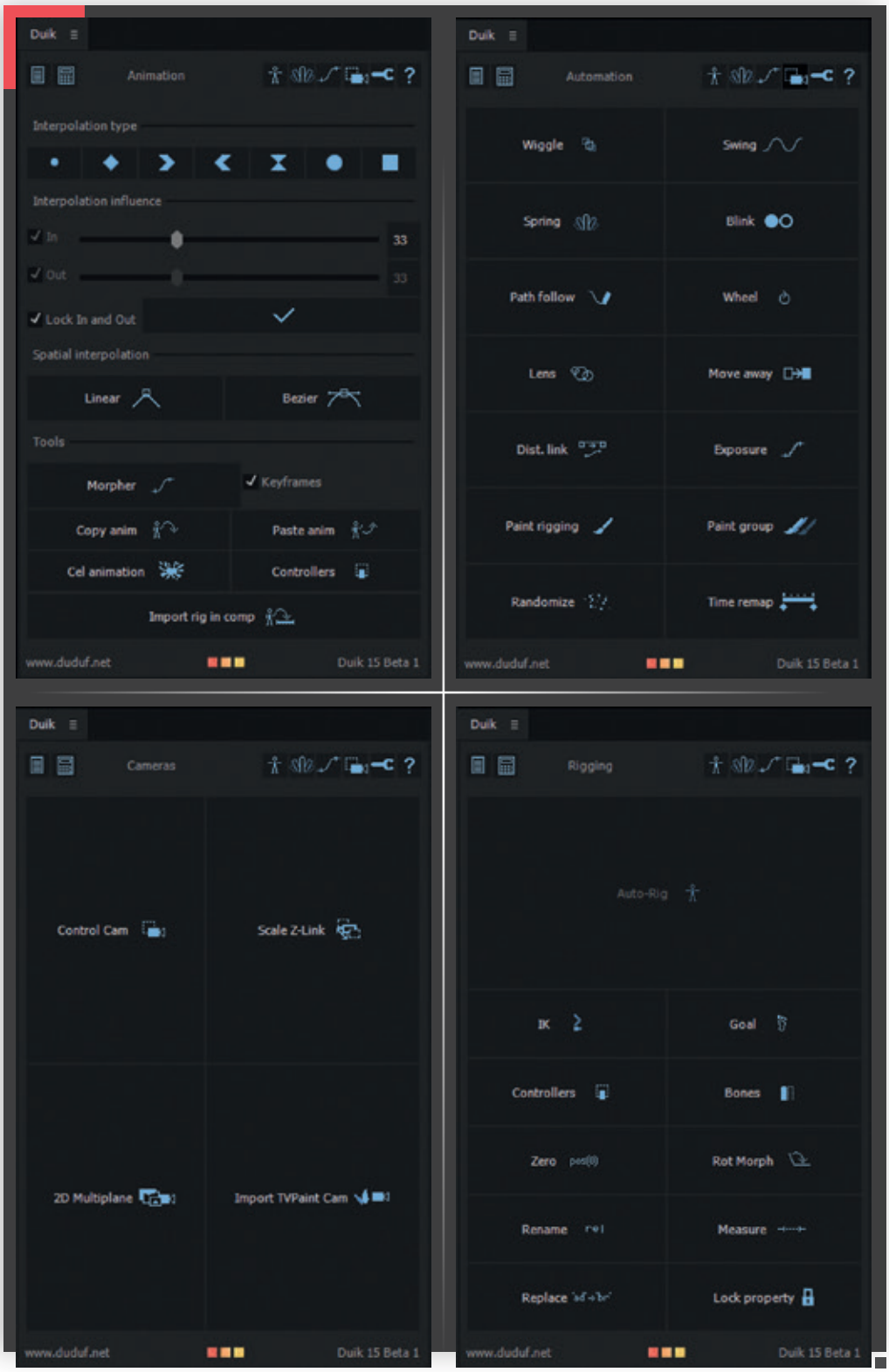
libDuik is loaded only once; this allows a faster launch of your scripts.

Modifying libDuik

If you're modifying libDuik and need to test it without having to reboot After Effects to reload it, you can uncomment the first line:

if (typeof ***Duik*** *===* *'object') delete* ***Duik****;*

inside libDuik itself, or you can include this line in your own script **before** *#include libDuik;*



Note: the presets distributed with libDuik are CC2014 versions. Sadly, After Effects presets cannot be used with versions of After Effects older than the one used to create them. If you need to use presets with older versions, you will have to create your own.

PSEUDO EFFECTS LIST

libDuik uses pseudo effects instead of expression controls. Those effects must be added to *presetEffects.xml* (see Introduction, Installing libDuik for more details).

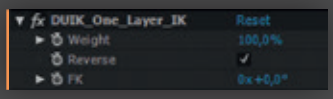
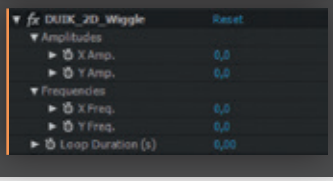
The XML code used to create those effects is *Duik_presetEffects.xml*

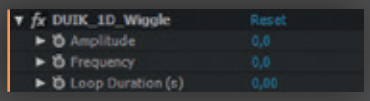
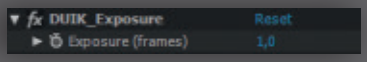
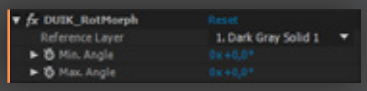
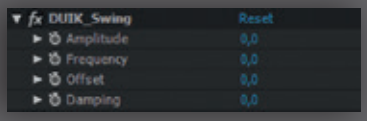
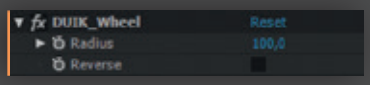
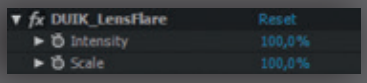
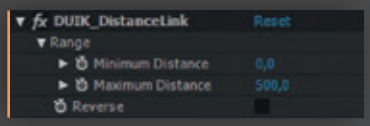
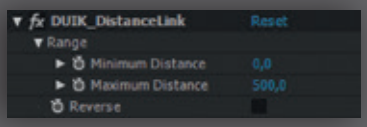
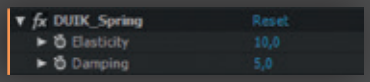
Here is a list of the effects available.
Those effects can be added on any layer with:
layer.effect.addProperty('PSEUDO/' + matchName)

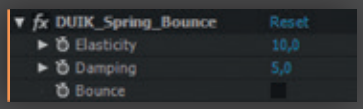
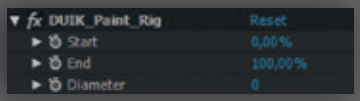
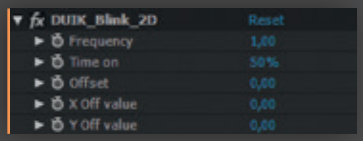
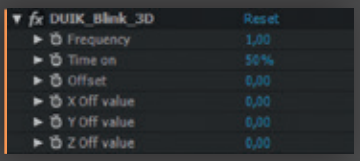
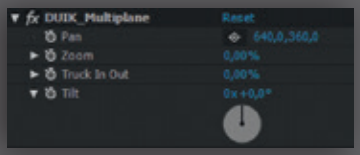
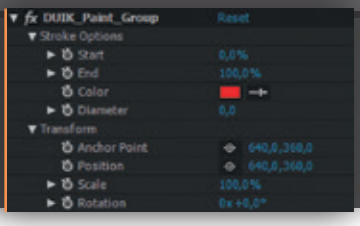
Example: *app.project.activeItem.layer(1).effect.addProperty('PSEUDO/DUIK_One_Layer_IK');*

But, using libDuik, you should instead use *Duik.utils.addEffect(layer,effectMatchName);*
Example:
Duik.utils.addEffect(layer,'DUIK_One_Layer_IK');

This way, libDuik checks if the pseudo effect has been installed, and if not, it tries to use a corresponding preset (.ffx file)

matchName	Description	Screenshots
DUIK_One_Layer_IK	Used by one layer IK	
DUIK_Two_Layer_IK	Used by two layer IK	
DUIK_Three_Layer_IK	Used by three layer IK	
DUIK_3D_Wiggle	Used for wiggle on 3D properties	
DUIK_2D_Wiggle	Used by wiggle on 2D properties	

matchName	Description	Screenshots
DUIK_1D_Wiggle	Used by wiggle on 1D properties	
DUIK_Exposure	Used by exposure, in fixedmode	
DUIK_RotMorph	Used by Rotation Morph	
DUIK_Swing	Used by Swing (oscillation)	
DUIK_Wheel	Used by Wheel	
DUIK_LensFlare	Used by Lens Flare on the layer of the center to control size and intensity	
DUIK_LensFlareDistance	Used by Lens Flare on flare layers to control their distance from the center	
DUIK_DistanceLink	Used by Distance Link	
DUIK_Spring	Used by Spring on 2D and 3D properties	

matchName	Description	Screenshots
DUIK_Spring_Bounce	Used by spring on 1D properties, includes a checkbox called 'bounce'.	
DUIK_Paint_Rig	Used by the paint rig tool to control the end, begin and diameter properties of the paint brushes	
DUIK_Blink_1D	Used by blinkon 1D properties	
DUIK_Blink_2D	Used by blinkon 2D properties	
DUIK_Blink_3D	Used by blinkon 3D properties	
DUIK_Multiplane	Used by 2D Multiplane cam	
DUIK_Paint_Group	Used by Paint groups	

OBJECTS

libDuik creates new javascript instantiable javascript objects, which can be very helpful when working with After Effects, and are needed by Duik.

Name	Description
KeySpatialProperties	Describes all spatial properties of a KeyFrame.
KeyFrame	Represents an animation keyframe of After Effects
PropertyAnim	Describes the keyframe animation of a given property
MaskAnim	Describes all the keyframe animations of the properties of a given Mask
EffectAnim	Describes all the keyframe animations of the properties of a given Effect
LayerAnim	Describes all the keyframe animations of the transformation, masks, and effects of a layer
IKRig	Describes an IK created by Duik (layers needed, type, goal, controller...)
PropertyDescription	Describes any property (useful to retrieve a property if the selection changes in the effects)
Controller	A controller created by Duik
TVPCamera	A camera imported from TVPaint
TVPCameraPoint	A spatial keyframe of a camera from TVPaint
TVPProfileprof	Temporal interpolation from TVPaint
TVPProfileprofPoint	A temporal keyframe from TVPaint
OnionSkin	Describes the onion skin used by Duik in the *cel animation* tool

KeySpatialProperties object attributes

Describes all spatial properties of a KeyFrame.

KeySpatialProperties.inTangent
KeySpatialProperties.outTangent
KeySpatialProperties.continuous
KeySpatialProperties.autoBezier
KeySpatialProperties.roving

Name	Type	Description
inTangent	float or Array of float	In spatial tangent of the keyframe
outTangent	float or Array of float	Out spatial tangent of the keyframe
continuous	boolean	Spatial interpolation set to continuous
autoBezier	boolean	Spatial interpolation set to auto Bezier
roving	boolean	Keyframeset to roving

KeyFrame object attributes

Represents an animation keyframe of After Effects
See Duik.utils.getKey and Duik.utils.addKey

KeyFrame.time
KeyFrame.value
KeyFrame.inInterpolationType
KeyFrame.outInterpolationType
KeyFrame.spatial
KeyFrame.spatialProperties
KeyFrame.inEase
KeyFrame.outEase
KeyFrame.continuous
KeyFrame.autoBezier

Name	Type	Description
time	float	Time of the keyframe in the comp
value	Any AFX propertyValueType	Value of the keyframe
inInterpolationType	Enumerated value; one of: KeyframeInterpolationType.LINEAR KeyframeInterpolationType.BEZIER KeyframeInterpolationType.HOLD	In interpolation type of the keyframe
outInterpolationType	Enumerated value; one of: KeyframeInterpolationType.LINEAR KeyframeInterpolationType.BEZIER KeyframeInterpolationType.HOLD	Outinterpolation type of the keyframe

Name	Type	Description
spatial	boolean	True if the keyframe is on a spatial property, one of: PropertyValueType.ThreeD_SPATIAL PropertyValueType.TwoD_SPATIAL
spatialProperties	KeySpatialProperties	All spatial properties of the keyframe. See *KeySpatialProperties object attributes*
inEase	Array of AFX KeyframeEase objects	Incoming temporal ease of the keyframe
outEase	Array of AFX KeyframeEase objects	Outgoing temporal ease of the keyframe
continuous	boolean	Temporal interpolation set to continuous

PropertyAnim object attributes

Describes the keyframe animation of a given property
See Duik.utils.getPropertyAnim and See Duik.utils.setPropertyAnim

PropertyAnim.name
PropertyAnim.keys
PropertyAnim.startValue

Name	Type	Description
name	string	Name of the animated Property
keys	Array of KeyFrames	Keyframes of the animation, see *KeyFrame object attributes*
startValue	Any AFX propertyValueType	First value of the animation. If there's no keyframe PropertyAnim.keys.length == 0, the value of the property.

MaskAnim object attributes

Describes all the keyframe animations of the properties of a given Mask
See Duik.utils.getPropertyAnims

MaskAnim.name
MaskAnim.anims

Name	Type	Description
name	string	Name of the animated Mask
anims	Array of PropertyAnim	Animations of the properties of the mask, see *PropertyAnimobject attributes*

EffectAnim object attributes

Describes all the keyframe animations of the properties of a given Effect
See Duik.utils.getPropertyAnims

EffectAnim.name
EffectAnim.matchName
EffectAnim.anims

Name	Type	Description
name	string	Name of the animated Effect
matchName	string	matchName of the animated Effect
anims	Array of PropertyAnim	Animations of the properties of the effect, see *PropertyAnimobject attributes*

LayerAnim object attributes

Describes all the keyframe animations of the transformation, masks, and effects of a layer
See Duik.copyAnim and Duik.pasteAnim

LayerAnim.name
LayerAnim.index
LayerAnim.transformAnims
LayerAnim.effectsAnims
LayerAnim.masksAnims
EffectAnim.anims

Name	Type	Description
name	string	Name of the animated layer
index	string	Indexof the animated layer
transformAnims	Array of PropertyAnim	Animations of the transformations, see *PropertyAnimobject attributes*

Name	Type	Description
effectsAnims	Array of EffectAnim	Animations of the effects, see *EffectAnim object attributes*
masksAnims	Array of MaskAnim	Animations of the masks, see *MaskAnim object attributes*

IKRig object attributes

Describe an IK created by Duik.

IKRig.type *IKRig.layer2* *IKRig.goal*
IKRig.layer1 *IKRig.layer3* *IKRig.controller*

Name	Type	Description
type	int	Type of the IK, either 1, 2, or 3. 0 if the IK is not valid.
layer1	AVLayer	First layer of the IK (the root, the top parent)
layer2	AVLayer or null	The second layer of the IK, if type is 2 or 3, or null if type is 1.
layer3	AVLayer or null	The third layer of the IK, if type is 3, or null if type is 1 or 2.
goal	AVLayer or null	A goal layer attached to the IK, or null
controller	AVLayer	The controller layer of the IK
threeD	boolean	true if this is a 3D IK (used for type 2 only)
frontFacing	boolean	true if the 3D layers face the front/back views, false if they face the right/left views.
clockWise	boolean	true if the IK bends clockwise. Used with type 2 and 3 only.
created	boolean	true if the IK has already been successfully created and exists in the comp.

IKRig object methods

IKRig.create()

Name	Type	Description
create()	Creates the rig in the comp	AVLayer, the zero created (if any) or null

IKRig.create()

Creates the IK Rig in the comp. Sets the created attribute to true if sucessful.
returns
AVLayer, the zero created (if any) or null.

PropertyDescription object attributes

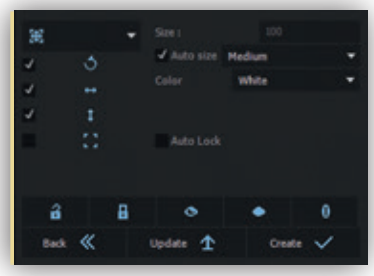
Describes any property (useful to retrieve a property if the selection changes in the effects)

PropertyDescription.isEffect
PropertyDescription.index
PropertyDescription.depth
PropertyDescription.parentName
PropertyDescription.dimensions
PropertyDescription.canSetExpression

Name	Type	Description
isEffect	boolean	Property.parentProperty.isEffect
index	integer	Property.propertyIndex
depth	integer	Property.propertyDepth
parentName	string	Property.parentProperty.name
dimensions	integer	1, 2 or 3
canSetExpression	boolean	Property.canSetExpression

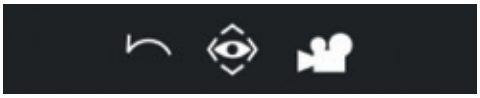
Controller object attributes

A controller created by Duik, which can have several shapes.



There are four transform shapes which can be combined:

And three special shapes:



Controller.locked
Controller.xPosition
Controller.yPosition
Controller.rotation
Controller.scale
Controller.arc
Controller.eye
Controller.layer
Controller.size
Controller.type
Controller.color

Name	Type	Description	Screenshot
locked	boolean	If true, transformation properties not controlled by the controller are locked with a simple expression, to preventinadvertantlychanging them	
xPosition	boolean	If true, the X Position of the controller may be animated	

Name	Type	Description	Screenshot
yPosition	boolean	If true, the Y Position of the controller may be animated	
rotation	boolean	If true, the Rotation of the controller may be animated	
scale	boolean	If true, the Scale of the controller may be animated	
arc	boolean	If true, the Rotation of the controller may be animated. The controller is displayed differently than with Controller. rotation, because its anchor point may be moved.	
eye	boolean	If true, the Positionof the controller may be animated. The icon is an eye.	
camera	boolean	If true, the Position and rotationof the controller may be animated. The icon is a camera.	
layer	ShapeLayer	The controller layer	
size	float	The sizeof the controller (in % if type is VECTOR, pixels if type is NULL) Set to 0to use Duik.settings.controllerSize	
type	integer	Enumerated value, one of: Duik.layerTypes.NULL Duik.layerTypes.VECTOR	
color	Array of floats [R,V,B,A]	The color of the controller	

Controller object methods

Controller.lock() *Controller.unlock()* *Controller.update()*

Name	Description	Return
lock()	Locks the transformation properties not controlled by the controller, to preventinadvertantlychanging them	void
unlock()	Unlocks the previously locked transformation properties. Note that before parenting a controller, it should be unlocked.	void
update()	Updates the shape of the controller, if its properties have changed	void

TVPCamera object attributes

Describes a Camera imported from TVPaint

TVPCamera.points *TVPCamera.pointCount* *TVPCamera.profileprof*

Name	Type	Description
points	Array of *TVPCameraPoint*	The spatial keyframesof the camera animation
pointCount	integer	The number of spatial points of the camera
profileprof	*TVPProfileprof*	The temporal interpolation of the camera

TVPCamera object methods

TVPCamera.createNull(comp, links) *TVPCamera.precompose(comp)* *TVPCamera.applyToLayer(camLayer, links)*

Name	Description	Return
createNull(comp, links)	Creates a Null object representing the TVPaint Camera in the comp	void
precompose(comp)	Precomposes all layers of the comp, and animates the resulting layer with the animation of the camera	void
applyToLayer(camLayer, links)	Applies the animation of the camera to the given layer	void

TVPCameraPoint object attributes

A spatial keyframe of a camera from TVPaint

TVPCameraPoint.x *TVPCameraPoint.y* *TVPCameraPoint.zoom* *TVPCameraPoint.rotation*

Name	Type	Description
x	float	X position
y	float	Y position
zoom	float	Zoom value (from 0.0 to 1.0 or more)
rotation	float	Rotation (degrees)

TVPProfileprof object attributes

A temporal interpolation from TVPaint

TVPProfileprof.points *TVPProfileprof.linear* *TVPProfileprof.pointCount*

Name	Type	Description
points	Array of *TVPProfileprofPoint*	Temporal keyframes
linear	boolean	Wether interpolation is linear or bezier
pointCount	integer	Number of temporal keyframes

TVPProfileprofPoint object attributes

A temporal keyframe from TVPaint

TVPProfileprofPoint.u *TVPProfileprofPoint.v*

Name	Type	Description
u	float	Time coordinate of the key (from 0.0 to 1.0, 1.0 representing the end of the animation)
v	float	Value coordinate of the key (from 0.0 to 1.0, 1.0 representing the value of the last spatial point.

OnionSkin object attributes

Describes the onion skin used by Duik in the *cel animation* tool

OnionSkin.activated *OnionSkin.inOpacity* *OnionSkin.exposure*
OnionSkin.duration *OnionSkin.outOpacity*

Name	Type	Description
activated	boolean	Wether the ionion skin is displayed or not
duration	integer	The duration of the onion skin, in frames
inOpacity	float	The maximum opacity of the incomminh onion skin
outOpacity	float	The maximum opacity of the outgoing onion skin
exposure	integer	The animation exposure, in frames

DUIK

Duik Enumerated Values

Duik uses some predefined values to be simpler to use. Here are those values you can use with Duik settings, methods and attributes:

Name	Type	Value
Duik.sizes.SMALL	integer	0
Duik.sizes.MEDIUM	integer	1
Duik.sizes.BIG	integer	2
Duik.layerTypes.VECTOR	integer	2
Duik.layerTypes.NULL	integer	1
Duik.layerTypes.SOLID	integer	0
Duik.getLayers.INDEX	integer	0
Duik.getLayers.NAME	integer	1
Duik.getLayers.SELECTION_INDEX	integer	2
Duik.placement.TOP	integer	0
Duik.placement.BOTTOM	integer	1
Duik.placement.OVER_LAYER	integer	2
Duik.placement.UNDER_LAYER	integer	3
Duik.colors.WHITE	Array of floats	[1,1,1,1]
Duik.colors.RED	Array of floats	[1,0,0,1]
Duik.colors.GREEN	Array of floats	[0,1,0,1]
Duik.colors.BLUE	Array of floats	[0,0,1,1]
Duik.colors.CYAN	Array of floats	[0,1,1,1]
Duik.colors.MAGENTA	Array of floats	[1,0,1,1]
Duik.colors.YELLOW	Array of floats	[1,1,0,1]
Duik.colors.BLACK	Array of floats	[0,0,0,1]
Duik.colors.LIGHT_GRAY	Array of floats	[0.75,0.75,0.75,1]
Duik.colors.DARK_GRAY	Array of floats	[0.25,0.25,0.25,1]

Duik Attributes

string *Duik.version*	boolean *Duik.forceReload*	string *Duik.presetPath*
float *Duik.versionNumber*	boolean *Duik.usePresets*	float *Duik.presetEffectsInstalledVersion*

Name	Type	Description
version	string, read-only	Version string of libDuik
versionNumber	float, read-only	Version numberof libDuik
usePresets	*boolean*	true to use presets instead of pseudo effects.
presetPath	*string*	Path where presets are located; By default, the path of *libDuik.jsxinc*itself.
presetEffectsInstalledVersion	float, read-only	Version number of installed pseudo effects. Should be the same of *Duik.versionNumber*
copiedAnim	Array of LayerAnim	The layer animations copied with *Duik.copyAnim()*method.

Duik Objects

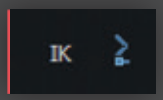
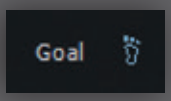
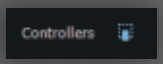
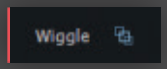
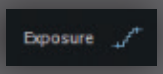
Duik.uiString	*Duik.utils*	*Duik.js*
Duik.settings	*Duik.setup*	*Duik.bridge*

Name	Description
uiStrings	Contains all string names used by effects created by Duik. You can set these strings to translate libDuik at runtime. Default values are English names.
settings	Access to settings used by Duik.
utils	Some useful tools
setup	Methods and attributes to correctly install libDuik &pseudo effects.
bridge	Import / Export tools
js	General javascript tools

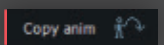
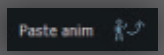
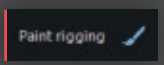
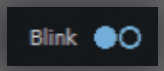
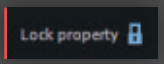
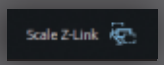
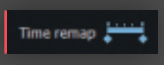
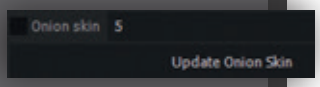
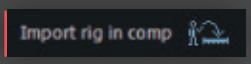
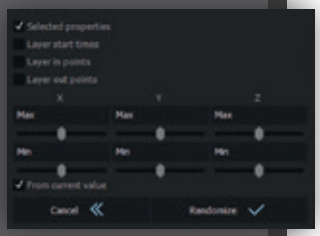
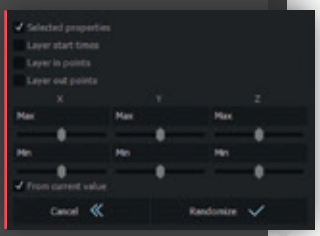
Duik Methods

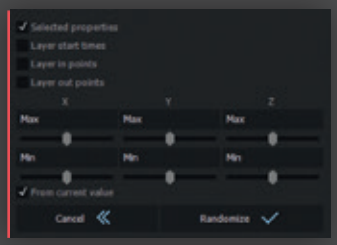
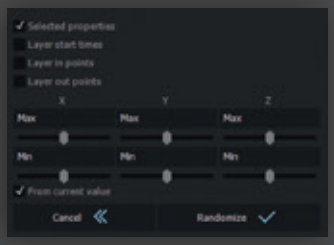
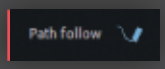
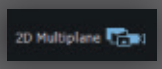
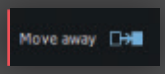
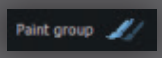
Low-level methods are listed below (greyed) but they are not documented.
If you do not understand what low-level methods do by reading them in *libDuik.jsxinc*, you shouldn't need them.

Duik.autoIK(layers, clockWise, frontFacing)
Duik.goal(layer, controller)
Duik.addController(layer,color,rotation,xPosition,yPosition,scale,arc)
Duik.addControllers(layers,color,rotation,xPosition,yPosition,scale,arc)
Duik.oneLayerIK(controller,layer)
Duik.twoLayerIK(controller,root,end,clockWise,frontFacing)
Duik.threeLayerIK(controller,root,middle,end,clockWise)
Duik.wiggle(layer,property,separateDimensions)
Duik.threeDWiggle(layer,property,)
Duik.twoDWiggle(layer,property)
Duik.oneDWiggle(layer,property)
Duik.adaptativeExposure(layer,property,precision,minExp,maxExp)
Duik.fixedExposure(layer,property)
Duik.addBones(layers)
Duik.addZero(layer)
Duik.addZeros(layers)
Duik.rotationMorph(layer,prop)
Duik.swing(layer,prop)
Duik.wheel(layer,radius,curved)
Duik.morpher(layers)
Duik.lensFlare(layers)
Duik.distanceLink(layer, property, parentLayer)
Duik.spring(property, layer, simulated)
Duik.copyAnim(layers, selectedKeysOnly, startTime, endTime)
Duik.pasteAnim(layers, layerAnims, startTime, getLayerMethod)
Duik.rigPaint(layers)
Duik.blink(layer,prop)
Duik.lockProperty(layer, prop)
Duik.scaleZLink(layers)
Duik.timeRemap(layers)
Duik.onionSkin(layer,activate,duration)
Duik.importRigInComp(comp,rigComp,rigName)
Duik.randomizeProperties(props,fromCurrentVal,xMin,xMax,yMin,yMax,zMin,zMax)
Duik.randomizeStartTimes(layers,fromCurrentVal,min,max)
Duik.randomizeInPoints(layers,fromCurrentVal,min,max)
Duik.randomizeOutPoints(layers,fromCurrentVal,min,max)
Duik.pathFollow(layer)
Duik.multiplane(numLayers)
Duik.moveAway(layer)
Duik.groupPaint(props)
Duik.randomizeSelectedKeys(layrs,fromCurrentVal,xMin,xMax,yMin,yMax,zMin,zMax)
Duik.randomizeSelectedKeyTimes(layrs,fromCurrentVal,Min,Max)

Name	Description	Return	Screenshot from Duik
autoIK(layers,clockWise, frontFacing)	AddsIK onthe layers	true if successful, false if anything went wrong	
goal(layer, controller)	Adds a goal effect to the layer, which may be controlled by a controller	true if successful, false if anything went wrong	
addController(layer, color, autoLock, rotation, xPosition, yPosition, scale, arc)	Createsa null object (controller) at layer position and named by layer. name	Controller object	
addControllers(layers, color, autoLock, rotation, xPosition, yPosition, scale, arc)	For each layer, Createsa null object (controller) at layer position and named by layer. name	Array of Controller objects	
wiggle(layer, property, separateDimensions)	Adds a wiggle effect to given property	true if successful, false if anything went wrong	
adaptativeExposure(layers, precision, minExp, maxExp, sync, layerSync)	Adds exposure controls to the animation of the property.	true if successful, false if anything went wrong	

Name	Description	Return	Screenshot from Duik
fixedExposure(layer, prop)	Adds exposure controls to the animation of the property.	true if successful, false if anything went wrong	Exposure
addBones(layers)	Adds bones to the layers	Array of AVLayer; bones	Bones
addZero(layer)	Adds zero to the layer	AVLayer; zero	
addZeros(layers)	Adds zeros to the layers	Array of AVLayer; zeros	Zero pos(0)
rotationMorph(layer, prop)	Creates a rotation morph on the given property	true if successful, false if anything went wrong	Rot Morph
swing(layer,prop)	Creates a swing on the given property	true if successful, false if anything went wrong	Swing
wheel(layer, radius, curved)	Automates the rotation of the given layer using its position	true if successful, false if anything went wrong	Wheel
morpher(layers)	Adds a slider to easily control interpolations of selected properties of the given layers.	true if successful, false if anything went wrong	Morpher
lensFlare(layers)	Rigs the layers to move like a lens flare.	true if successful, false if anything went wrong	Lens
distanceLink(layer, property, parentLayer)	Linksthe property to the distance of parentLayer	true if successful, false if anything went wrong	Dist. link
spring(property, layer, simulated)	Adds a spring effect on the properties	true if successful, false if anything went wrong	Spring

Name	Description	Return	Screenshot from Duik
copyAnim(layers, selectedKeysOnly, startTime, endTime)	Copies the animation of the layers	Array of LayerAnim	
pasteAnim(layers, layerAnims, startTime, getLayerMethod)	Pastes the animations on the layers	int, the number of the layers on whichh an animtion was pasted	
rigPaint(layers)	Rigs the paint effects to be able to animate all strokes as if there was only one.	Void	
blink(layer, prop)	Adds a blink effect to the property.	true if successful, false if anything went wrong	
lockProperty(layer, prop)	Locks the property with a simple expression.	void	
scaleZLink(layers)	Links the distance of the layer from the camera to its scale so its apparent size won't change.	void	
timeRemap(layers)	Activates the time remapping of the layers, extending them to the length of the comp and adjusting the last keyframe.	Void	
onionSkin(layer, activate, duration)	Activates or deactivates an onion skin on the paint effects ofthe layer.	void	
importRigInComp (comp,rigComp, rigName)	Imports a rig in the current comp (taking care of duplicates, expressions, controllers and adding a Master Controller to move, scale &flip the rig.	Void	
randomizeProperties (props, fromCurrentVal, xMin, xMax, yMin, yMax, zMin, zMax)	Randomizes the values of the properties.	void	
randomizeStartTimes (layers, fromCurrentVal, min, max)	Randomizes start times of the given layers.	void	

Name	Description	Return	Screenshot from Duik
randomizeInPoints (layers, fromCurrentVal, min, max)	Randomizes in points of the given layers.	void	
randomizeOutPoints (layers, fromCurrentVal, min, max)	Randomizes out points of the given layers.	Void	
pathFollow(layer)	Rigs the rotation of a layer so it follows its path	Void	
multiplane(numLayers)	Creates null objects rigged to easily animate a 2D multiplane camera.	void	
moveAway(layer)	Rigs the layer to be able to move it away from its parent with a simple slider	void	
groupPaint(props)	Rigs the paint effects to be able to animate all brushes as if there was only one.	void	
randomizeSelectedKeys(props, fromCurrentVal, xMin, xMax, yMin, yMax, zMin, zMax)	Randomizes the values of the selected keyframes of the properties.	void	
randomizeSelectedKeyTimes	Randomizes the times of the selected keyframes of the properties.	void	

• Duik.autoIK
(layers, clockWise, frontFacing)

Adds IK on the layers. Duik will attempt to autodetect each layer role, using *Duik.utils.prepIK()*. If it can't (wrong parenting, wrong placement…) it will use the order of the layers in the Array or LayerCollection: first the layers, from end to root (from child to parent), last the controller.

parameters:
layers | Array of AVLayers or LayerCollection
clockWise | boolean, used only with two-layer and three-layer IK, default: false
frontFacing | boolean, default: false

returns
IKRig object created

• Duik.goal
(layer, controller)

Adds a goal effect to the layer, which may be controlled by a controller

parameters:
layer| AVLayer
controller | AVLayer or undefined

returns
true if successful, false if anything went wrong

• Duik.addController
(layer, color, autoLock, rotation, xPosition, yPosition, scale, arc)

Creates a null object (controller) at layer position and named by layer.name

If *Duik.settings.controllerType* is *Duik.layerTypes.VECTOR*, the parameters are used to draw a nice icon instead of using a null object.

If autoLock is true, the transformations which should not be changed are locked with a simple expression.

See *Controller object*.

parameters
layer | AVLayer
color | Array of 4 floats : [R,V,B,A], default [1,1,1,1]
autoLock | boolean, default false
rotation | boolean, default true
xPosition | boolean, default true
yPosition | boolean, default true
scale | boolean, default false
arc | boolean, default false

returns
Controller object

• Duik.addControllers
(layers, color, autoLock, rotation, xPosition, yPosition, scale, arc)

This is a convenience method, which runs Duik.addController() on each layer of the given array of layers.

parameters
layers | Array of AVLayer or LayerCollection
color | Array of 4 floats : [R,V,B,A], default [1,1,1,1]
autoLock | boolean, default false
rotation | boolean, default true
xPosition | boolean, default true
yPosition | boolean, default true
scale | boolean, default false
arc | boolean, default false

returns
Array of Controller objects

• Duik.wiggle
(layer, property, separateDimensions)

Adds a wiggle effect to given property.

parameters
layer | AVLayer of the property
property | Property
separateDimensions | boolean, false to apply the same wiggle to all dimensions, default: false

returns
true if successful, false if anything went wrong

• Duik.fixedExposure
(layer,prop)

Adds exposure controls to the animation of the property.

parameters
layer | AVLayer
prop | Property

returns
true if successful, false if anything went wrong

• Duik.adaptativeExposure (layers,precision, minExp,maxExp,sync,layerSync)

Adds exposure controls to the animation of the property. The exposure adapts automatically to the speed, according to the given precision, of the properties between a minimum and a maximum exposure (in frames).

parameters
layers | Array of AVLayer or LayerCollection
precision | integer, default: 100
minExp | integer, default: 1
maxExp | integer, default: 4
sync | boolean, wether to sync all properties, default: true
layerSync | boolean, wether to sync all layers, if sync == true, default: false

returns
true if successful, false if anything went wrong

• Duik.addBones (layers)

Adds bones to the layers, only on selected pins if any, or else on all puppet pins found on those layers.

parameters
layers | Array of AVLayers

returns
Array of AVLayers, the bones created

• Duik.addZero (layer)

Adds a null object for the layer, at the same place and orientation, and then parents the layer to it, parenting the null object (the zero) to the former parent of the layer.

parameters
layers | Array of AVLayers

returns
Array of AVLayers, the zeros created

• Duik.addZeros (layers)

This is a convenience method, which runs Duik.addZero() on each layer of the given array of layers.

parameters
layers | Array of AVLayers or LayerCollection

returns
Array of AVLayers, the zeros created

• Duik.rotationMorph (layer,prop)

Creates a rotation morph on the given property.

Parameters
layer | AVLayer
prop | Property

returns
true if successful, false if anything went wrong

• Duik.swing (layer,prop)

Creates a swing on the given property

parameters
layer | AVLayer
prop | Property

returns
true if successful, false if anything went wrong

• Duik.wheel (layer, radius, curved)

Automates the rotation of the given layer using its position.
If curved, works even if the trajectory is not horizontal, but is heavier to compute.

parameters
layer | AVLayer
radius | float, default 100.0
curved | boolean, default false

returns
true if successful, false if anything went wrong

• Duik.morpher (layers)

Adds a «morpher», a slider to easily control interpolations of selected properties of the given layers.

parameters
layers | Array of AVLayer

returns
true if successful, false if anything went wrong

• Duik.lensFlare
(layers)

Rigs the layers to move like a lens flare. The first layer in the selection is the controller, with sliders for intensity and size; the other layers have a distance property to adjust their position along the lens flare.

parameters
layers | Array of AVLayer

returns
true if successful, false if anything went wrong

• Duik.distanceLink
(layer,property,parent Layer);

Links the property to the distance of parentLayer

parameters
layer | AVLayer containing the property
property | Property to rig
parentLayer | AVLayer which distance from layer is used to rig

returns
true if successful, false if anything went wrong

• Duik.spring
(property, layer, simulated)

Adds a spring effect on the property

parameters
property | Property
layer | AVLayer containing the property
simulated | if true, applies the simulated version of the spring, default: false

returns
true if successful, false if anything went wrong

• Duik.copyAnim
(layers, selectedKeysOnly, startTime, endTime)

Copies all the animations as *LayerAnim objects* (except expressions) on selected layers, and store them in the Array Duik.copiedAnim.

If selectedKeysOnly is true, copies only the selected keyframes, otherwise all the masks, effcts, and transformation properties will be copied, even if they are not animated (in this case, the value will be stored in the PropertyAnim.startValue). If you do not want to keep the properties without animation, you will have to loop through the arrays of PropertyAnim and check if PropertyAnim.keys.length > 0 to remove empty animations from the Arrays. See *LayerAnim object*

parameters
layers | Array or Collection of AVLayers
selectedKeysOnly | boolean, true to copy only selected keys, default: false
startTime | float, default: start of the comp
endTime | float, default: end of the comp

returns
Array of LayerAnim

• Duik.pasteAnim
(layers, layerAnims, startTime, getLayerMethod)

Pastes all the animations in the Array of LayerAnim on layers, using layer names or layer indexes, beginning at startTime
See *LayerAnim object*

parameters
layers | Layers where to paste the animation
layerAnims | Array of LayerAnim, default: Duik.copiedAnim
startTime | float, default: comp.time
getLayerMethod | one of Duik.getLayers.NAME, Duik.getLayers.INDEX, Duik.getLayers.SELECTION_INDEX, default: Duik.settings.getLayerMethod

returns
integer, number of layers on which animations were pasted

• Duik.rigPaint
(layers)

Rigs the paint effects to be able to animate all strokes as if there was only one.

parameters
layers | Array of AVLayers or LayerCollection

returns
void

• Duik.blink
(layer, prop)

Adds a blink effect to the property.

parameters
layer | AVLayer
prop | Property

returns
true if successful, false if anything went wrong

• Duik.lockProperty
(layer, prop)

Locks the property with a simple expression.

parameters
layer | AVLayer
prop | Property

returns
void

• Duik.scaleZLink
(layers)

Links the distance of the layer from the camera to its scale so its apparent size won't change. If multiple cameras, include the camera used in the array.

parameters
layers | Array of Layer or LayerCollection

returns
void

• Duik.timeRemap
(layers)

Activates the time remapping of the layers, extending them to the length of the comp and adjusting the last keyframe.

parameters
layers | Array of Layer or LayerCollection
loopType | String, «in» or «out» or «none», default: «none»

returns
void

• Duik.onionSkin
(layers)

Activates or deactivates an onion skin on paint effects on the layer.

parameters
layer | AVLayer
activate | boolean, default: true
duration | integer, onion skin duration in frames, default: 5

returns
void

• Duik.importRigInComp
(comp, rigComp, rigName, progressBar, progressText, containingWindow)

Imports a rig in the comp, transferring and linking the controllers in the new comp, while keeping the rig precomposed.

The rig comp is duplicated, including precomps, renamed, and expressions are updated, so that one can import the same rig several times.

A Master Controller is created to move, scale and flip the imported rig.

All controllers created by Duik, and any layer which name begins with "C_" is considered a controller. The controllers should not be parented to any of the other layers, but they can be parented to other controllers and have zeros.

Any controller without zero will have one automatically added, this is needed to link them from the composition with the rig to the one where it's imported.

parameters
comp | CompItem, the comp where to import the rig
rigComp | CompItem, the comp containing the rig
rigName | the name of this instance of the rig, must be unique in the project

returns
void

• Duik.randomizeProperties
(props, fromCurrentVal, xMin, xMax, yMin, yMax, zMin, zMax)

Randomizes the values of the properties.
Min and max values for each axis can be undefined: in this case, the axis won't be randomized.

parameters
props | Array of PropertyBase
fromCurrentVal | boolean, if true, min and max values are added to current property value

returns
void

• Duik.randomizeStartTimes
(layers, fromCurrentVal, min, max)

Randomizes start times of the given layers.
Min and Max in seconds (comp time).

parameters
layers | Array of Layers or LayerCollection
fromCurrentVal | boolean, if true, min and max values are added to current start time value

returns
void

• Duik.randomizeInPoints (layers, fromCurrentVal, min, max)

Randomizes in points of the given layers.
Min and Max in seconds (comp time).

parameters
layers | Array of Layers or LayerCollection
fromCurrentVal | boolean, if true, min and max values are added to current in point value

returns
void

• Duik.randomizeOutPoints (layers, fromCurrentVal, min, max)

Randomizes out points of the given layers.
Min and Max in seconds (comp time).

parameters
layers | Array of Layers or LayerCollection
fromCurrentVal | boolean, if true, min and max values are added to current out point value

returns
void

• Duik.pathFollow (layer)

Automates the rotation of the layer so it follows its path.

parameters
layer | AVLayer

returns
void

• Duik.multiplane (numLayers)

Creates null objects rigged to easily animate a 2D multiplane camera.

parameters
numLayers | integer, number of layers to create, default: 3

returns
void

• Duik.moveAway (numLayer)

Rigs the position of the layer to be able to move it away from its parent with a simple slider.

parameters
layer | AVLayer

returns
void

• Duik.groupPaint (props)

Rigs the paint effects to be able to animate all brushes as if there was only one.

parameters
props | Array of Properties (the brushes to rig)

returns
void

• Duik.randomizeSelectedKeys (layers, fromCurrentVal, xMin, xMax, yMin, yMax, zMin, zMax)

Randomizes the values of the selected keyframes of the properties.
Min and max values for each axis can be undefined: in this case, the axis won't be randomized.

parameters
layers | Array or Collection of Layers
fromCurrentVal | boolean, if true, min and max values are added to current property value

returns
void

• Duik.randomizeSelectedKeyTimes (layers, fromCurrentVal, min, max)

Randomizes the times of the selected keyframes of the properties.

parameters
ayers | Array or Collection of Layers
fromCurrentVal | boolean, if true, min and max values are added to current property value

returns
void

DUIK.SETUP

Methods and attributes to correctly install libDuik & pseudo effects.

Duik.setup Attributes

Duik.setup.presetEffects

Name	Type	Description
presetEffects	string	The XML (as string object) to insert just before *</effects>*in After Effects presetEffects.xml to correctly install libDuik pseudo effects. This includesthe version of of libDuik as an XMLcomment, which can be checked by *Duik.setup.checkPresetEffectsVersion* to ensure libDuik has been correcly installed.

Duik.setup Methods

Duik.setup.installPseudoEffects() *Duik.setup.checkPresetEffectsVersion()*

Name	Description	Return
installPseudoEffects()	Automatically install pseudo effects in After Effects presetEffects.xml	void
checkPresetEffectsVersion()	Checks the version of installed libDuik pseudo effects, stored in Duik.presetEffectsInstalledVersion	void

• *Duik.setup.installPseudoEffects ()*

Tries to Automatically install pseudo effects in After Effects *presetEffects.xml*. The installation can be checked with *Duik.checkPresetEffectsVersion()*, en then comparing *Duik.presetEffectsInstalledVersion* with *Duik.versionNumber*.

Example:

```
//install
Duik.installPseudoEffects();

//check
Duik.checkPresetEffectsVersion();

if (Duik.presetEffectsInstalledVersion != Duik.versionNumber) {
        //do something
} else {
        //continue loading your script
}
```

parameters:
none

returns
void

• *Duik.setup.checkPresetEffectsVersion ()*

Checks the version of installed libDuik pseudo effects, stored in *Duik.presetEffectsInstalledVersion*.
See ***Duik.setup.installPseudoEffects()*** for an example.

parameters:
none

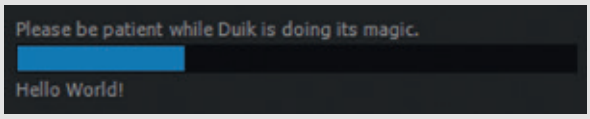
returns
void

DUIK.UI

Contains attributes and methods to manipulate some user interface objects (progress bar, alerts...) displayed by libDuik

Duik.ui ScriptUI Objects

Duik.ui.progressPanel
Duik.ui.progressGroup
Duik.ui.progressBar
Duik.ui.progressStatus



Name	Type	Description
progressPanel	Window	Window containing the progress bar and status of libDuik
progressGroup	Group	The group in the Window *progressPanel*, used for the layout of child elements of the window.
progressBar	ProgressBar	The ProgressBar used by libDuik
progressStatus	StaticText	The text displayed behind the *progressBar*

Duik.ui Methods

Duik.ui.updateProgressPanel (val,status)
Duik.ui.showProgressPanel (maxVal,status)
Duik.ui.hideProgressPanel ()

Name	Description	Return
updateProgressPanel (val, status)	Updates the progress panel.	Void
showProgressPanel (maxVal, status)	Initializes and displays the progress panel.	Void
hideProgressPanel ()	Hides the progress panel.	Void

• *Duik.ui.updateProgressPanel (val,status)*

Updates the progress panel, setting the value of the progress bar and the text of the status.

parameters:
val | integer, the value of the progress bar
status | string, the text to display behind the progress bar

returns
void

• *Duik.ui. showProgressPanel (maxVal,status)*

First, initializes the progress panel, settting the max value of the progress bar and the text to display behind it, then displays it.

parameters:
maxVal | integer, the max value of the progress bar
status | string, the text to display behind the progress bar

returns
void

• *Duik.ui. hideProgressPanel ()*

Hides the progress panel.

returns
void

DUIK.UISTRINGS

**Contains all string names used by effects created by Duik.
You can set these strings to translate libDuik at runtime.
Default values are English names.**

Duik.uistrings attributes

Duik.uiStrings.ik
Duik.uiStrings.wiggle
Duik.uiStrings.exposure
Duik.uiStrings.rotMorph
Duik.uiStrings.swing
Duik.uiStrings.wheel
Duik.uiStrings.lensFlare
Duik.uiStrings.distanceLink
Duik.uiStrings.spring
Duik.uiStrings.paintRig
Duik.uiStrings.flip
Duik.uiStrings.moveAway
Duik.uiStrings.multiplane
Duik.uiStrings.camInfluence

Name	Type	Default
ik	string	*"IK"*
wiggle	string	*"Wiggle"*
exposure	string	*"Exposure"*
rotMorph	string	*"Rotation Morph"*
swing	string	*"Swing"*
wheel	string	*"Wheel"*
lensFlare	string	*"Lens Flare"*
distanceLink	string	*"Distance Link"*
spring	string	*"Spring"*
paintRig	string	*"Paint Rig"*
flip	string	*"Flip"*
moveAway	string	*"Distance from parent"*
multiplane	string	*"Multiplane"*
camInfluence	string	*"Camera Influence"*

DUIK.SETTINGS

Access to settings used by Duik.

Duik.settings Attributes

These attributes define some settings and preferences needed by Duik.
If you set them, they can be saved to be reloaded even if After Effects is shutdown, using *Duik.settings.save()*. If this method is not called, the settings will be set back to previous values if After Effects is shut down.
Saved settings must be loaded at runtime calling *Duik.settings.load()*.
Default values can be restored using *Duik.settings.restoreDefaults()*.

Duik.settings.controllerSize
Duik.settings.controllerType
Duik.settings.controllerSizeAuto
Duik.settings.controllerSizeHint
Duik.settings.boneType
Duik.settings.boneSize
Duik.settings.boneSizeAuto
Duik.settings.boneSizeHint
Duik.settings.boneColor
Duik.settings.morpherCreatesKeyframes
Duik.settings.getLayersMethod
Duik.settings.bonePlacement
Duik.settings.ctrlPlacement
Duik.settings.controllerColor

Name	Type	Description	Default
controllerSize	integer	Size of controllers in pixels	100
controllerType	integer	Enumerated value, one of: Duik.layerTypes.NULL Duik.layerTypes.VECTOR	Duik.layerTypes.VECTOR
controllerSizeAuto	boolean	If true, controller sizes will be automatically adapted to comp size, according to *Duik.settings.controllerSizeHint*	true
controllerSizeHint	integer	Enumerated value, one of: Duik.sizes.SMALL Duik.sizes.MEDIUM Duik.sizes.BIG	Duik.sizes.MEDIUM
boneType	integer	Enumerated value, one of: Duik.layerTypes.NULL Duik.layerTypes.SOLID	Duik.layerTypes.SOLID
boneSize	integer	Size of bonesin pixels	20

Name	Type	Description	Default
boneSizeAuto	boolean	If true, bone sizes will be automatically adapted to comp size, according to *Duik.settings.boneSizeHint*	true
boneSizeHint	integer	Enumerated value, one of: Duik.sizes.SMALL Duik.sizes.MEDIUM Duik.sizes.BIG	Duik.sizes.MEDIUM
boneColor	string	Hex value of the color of the bones, excluding theleading « # »	« FF0000 »
morpherCreates Keyframes	boolean	If true, morpher will automatically create keyframes for each keyframe of the controlled properties	True
getLayersMethod	boolean	The method used to get layers (i.e. when pasting an animation) Enumerated value, one of: Duik.getLayers.NAME Duik.getLayers.INDEX Duik.getLayers.SELECTION_INDEX	Duik.getLayers.NAME
bonePlacement	integer	The placement of the bones in the comp. Enumerated value, one of: Duik.placement.TOP Duik.placement.BOTTOM Duik.placement.OVER_LAYER Duik.placement.UNDER_LAYER	Duik.placement.OVER_LAYER
ctrlPlacement	integer	The placement of the controllers in the comp. Enumerated value, one of: Duik.placement.TOP Duik.placement.BOTTOM Duik.placement.OVER_LAYER Duik.placement.UNDER_LAYER	Duik.placement.TOP
controllerColor	Array of integer	The color of the controllers, [R,G,B,A] or one of: Duik.colors.WHITE Duik.colors.RED Duik.colors.GREEN Duik.colors.BLUE Duik.colors.CYAN Duik.colors.MAGENTA Duik.colors.YELLOW Duik.colors.BLACK Duik.colors.LIGHT_GRAY Duik.colors.DARK_GRAY	Duik.colors.WHITE [1,1,1,1]

Duik.settings Methods

Duik.settings.save() *Duik.settings.load()* *Duik.settings.restoreDefaults()*

Name	Description	Return
save()	Saves Duik settings into After Effects preferences	void
load()	Loads Duik settings from After Effects preferences	void
restoreDefaults()	Restore default values to Duik settings	void

• *Duik.settings.save*
()

Saves Duik settings attributes into After Effects preferences (using app.settings.saveSetting())

Those settings can be loaded when the script runs using *Duik.settings.load()*. This allows to easily restore the settings set by the user even if After Effects is shut down.

parameters:
none

returns
void

• *Duik.settings.load*
()

Loads Duik settings attributes from After Effects preferences (using app.settings.getSetting())

This allows to easily restore the settings set by the user even if After Effects is shut down.

If this method is not called at runtime, default values will be loaded at first run.

parameters:
none

returns
void

• *Duik.settings.restoreDefaults*
()

Restore default values to Duik settings. These values will not be saved until Duik.settings.save() is called.

parameters:
none

returns
void

DUIK.BRIDGE

Tools for importing/exporting to/from After Effects.

Duik.bridge.tvPaint

Tools to import and export assets from/to TvPaint

Duik.bridge.tvPaint Methods

Duik.bridge.tvPaint.parseCam(camString)

Duik.bridge.tvPaint.loadCamFile(camFile)

Name	Description	Return
parseCam(camString)	Parses a string representing a camera exported from TVPaint.	*TVPCamera* object
loadCamFile(camFile)	Loads and parses a camera exported from TVPaint	*TVPCamera* object

Duik.bridge.tvPaint.parseCam (camString)

Parses a string representing a camera exported from TVPaint, with its animation.

parameters:
camString | the string to parse

returns
TVPCamera, see *TVPCamera Object*

Duik.bridge.tvPaint.loadCamFile (camFile)

Loads and parses a file representing a camera exported from TVPaint, with its animation.

parameters:
camFile | javascript File object to load

returns
TVPCamera, see TVPCamera Object

DUIK.JS

General javascript related tools.

Duik.js Methods

General javascript related tools.

Duik.js.escapeRegExp(string)
Duik.js.replaceAll(string, find, replace, caseSensitive)
Duik.js.random(min, max)
Duik.js.arrayIndexOf(array, value)
Duik.js.arrayHasDuplicates(array)
Duik.js.arrayGetDuplicates(array)
Duik.js.arrayRemoveDuplcates(array)

Name	Description	Return
escapeRegExp(string)	Escapes all regular expressions special characters in the given string	string
replaceAll(string, find, replace, caseSensitive)	Replaces all occurences of *find*by *replace*in the given string	string
random(min, max)	Random number between min and max	float
arrayIndexOf(array, value)	Get the index of value in the array, -1 if the array does not contain the value	integer
arrayHasDuplicates(array)	Checks if the array contains duplicates	boolean
arrayGetDuplicates(array)	Get the duplicated items of the array	Array
arrayRemoveDuplicates(array)	Removes the duplicated items of the array and returns them	Array

• *Duik.js.escapeRegExp (string)*

Escapes all regular expressions special characters in the given string.

parameters:
string | string

returns
string, the modified string.

• *Duik.js.replaceAll (string, find, replace, caseSensitive)*

Replaces all occurences of *find* by *replace* in the given string.

parameters:
string | string to modify
find | string to search
replace | string, replacement
caseSensitive | boolean, wether to perform a caseSensitive search

returns
string, the modified string.

• Duik.js.random
(min, max)

Random number between min and max

parameters:
min | float or integer, the minimum value
max | float or integer, the maximum value

returns
float, the random number.

• Duik.js.arrayIndexOf
(array, value)

Gets the index of the value in the array, -1 if the value is not found.
The values must be able to be compared using =.

parameters:
array | Array, the array
value | Object, the value to search

returns
integer, the index of the value, -1 if not found

• Duik.js.arrayHasDuplicates
(array)

Checks if the array contains duplicates

parameters:
array | Array, the array

returns
boolean

• Duik.js.arrayGetDuplicates
(array)

Get the duplicated items of the array

parameters:
array | Array, the array

returns
Array, the duplicates found. Empty array if none found.

• Duik.js.arrayRemoveDuplicates
(array)

Removes the duplicates from the array, and returns them

parameters:
array | Array, the array

returns
Array, the duplicates found. Empty array if none found.

DUIK.UTILS

Some useful methods.

Duik.utils Methods

Duik.utils.preparePropertyproperty,isFX,index,depth,parentName)
Duik.utils.getPropertyDimensions(property)
Duik.utils.getLength(value1,value2)
Duik.utils.getAverageSpeed(layer,property)
Duik.utils.addPseudoEffect(layer,pseudoEffectName)
Duik.utils.getPuppetPins(effects)
Duik.utils.getDistance(layer1,layer2)
Duik.utils.rigProperty(layer,prop,pseudoEffect)
Duik.utils.deselectLayers()
Duik.utils.checkNames(comp)
Duik.utils.getItem(items, itemIndex)
Duik.utils.getKey(prop, keyIndex)
Duik.utils.getPropertyAnims(prop, selectedKeysOnly, startTime, endTime)
Duik.utils.getPropertyAnim(prop, selectedKeysOnly, startTime, endTime)
Duik.utils.setPropertyAnim(prop, propAnim, startTime)
Duik.utils.addKey(prop,key, startTime)
Duik.utils.getFirstKeyTime(prop)
Duik.utils.hasSelectedKeys(prop)
Duik.utils.convertCollectionToArray(collection)
Duik.utils.prepIK(layers)
Duik.utils.getControllers(layers)
Duik.utils.getAverageSpeeds(layers)
Duik.utils.replaceInExpressions(prop,oldString,newString)
Duik.utils.replaceInLayersExpressions(layers, oldString, newString)
Duik.utils.renameLayer(layer, newName, updateExpressions,currentCompOnly)
Duik.utils.renameItem(item, newName, updateExpressions)
Duik.utils.layersHaveSelectedKeys(layers)
Duik.utils.renameEffect(effect,name)
Duik.utils.getFootageExposure(layer, accuracy, tolerance, r, g, b, a)
Duik.utils.addEffect(layer,effectMatchName)
Duik.utils.getLayerByName(layers, name)
Duik.utils.getLayerByNames(layers, names)
Duik.utils.getLayersByName(layers, name)
Duik.utils.getLayersByNames(layers, names)
Duik.utils.sortByDistance(layers, from)
Duik.utils.getWorldPos(layer)
Duik.utils.sortLayersByIndex(layers)

Name	Description	Return
preparePropertyproperty, isFX, index, depth, parentName)	Preparesproperty to be rigged	true if property can set expression, false otherwise
getPropertyDimensions (property)	Gets the dimensions of the property (1, 2 or 3), taking care of 2D layer positions (reported as 3D by AFX, but to be considdered as 2D)	integer, number of dimensions
getLength(value1, value2)	Gets the length between the values, whichever dimensions they are	float, length between the values
getAverageSpeed(layer, property)	Gets the average speed of the animated property, between its first and last keyframe only	float, average speed of the property
addPseudoEffect(layer, pseudoEffectName)	Adds a Duik predefined pseudo effect to the layer	Property, the effect added

Name	Description	Return
getDistance(layer1,layer2)	Measure distance between two layers	integer, distance between layers, in pixels
getPuppetPins(effects)	Gets all puppet pins from a layer effects	Array of Properties, all puppet pins found
rigProperty(layer, prop, pseudoEffect)	Performs some checks on the property and adds a pseudo effect on the layer	Property, the effect added
deselectLayers()	Deselects all layers	Void
checkNames(comp)	Checks for duplicate names among the layers of the comp, renaming them if found.	true if any layer was renamed
getItem(items, itemIndex)	Gets the item as if it were in a 0-based indexed Array, even if it is in a 1-based indexed Collection	Object, the item
getKey(prop, keyIndex)	Gets the keyframe at keyIndex on the property	KeyFrame object
getPropertyAnims (prop, selectedKeysOnly, startTime, endTime)	Gets the keyframe animations on the child properties of the prop, if it's a PropertyGroup (recursive), or the animation of the prop if it's a Property	Array of PropertyAnim objects
getPropertyAnim(prop, selectedKeysOnly, startTime, endTime)	Gets the keyframe animation of the Property	PropertyAnim object
setPropertyAnim (prop, propAnim, startTime)	Sets the animation on the property	boolean, true if succeeded
addKey(prop,key, startTime)	Adds a keyframe on the property	void
getFirstKeyTime(prop)	Gets the time of the first key on the property	float, time of the keyframe
hasSelectedKeys(prop)	Checks if the properties has keyframes which are selected	Boolean
convertCollectionToArray (collection)	Converts the given Collection to an array. If the parameter is already an Array, returns a copy of it.	Array
prepIK(layers)	Creates an *IKRig* object, automatically detecting each layer usage.	IKRig object

Name	Description	Return
getControllers(layers)	Gets the controllers created by Duik found in the Array or Collection	Array of Controllerobjects
getAverageSpeeds(layers)	Gets the average variation speed of the selected properties in the layers	float, average speed
replaceInLayersExpressions (layers, oldString, newString)	Replaces all occurences of oldString by newString in all the expressions of all the layers.	void
renameLayer(layer, newName, updateExpressions, currentCompOnly)	Renames the layer, updating expressions in all the compositions of the project	void
renameItem(item, newName, updateExpressions)	Renames the item, updating expressions in all the compositions of the project, if the item is a CompItem	void
layersHaveSelectedKeys(layers)	Checks if there are selected animation keyframes on the layers	boolean
renameEffect(effect,name)	Renames the effect, making sure there are not two effects that share the same name on the layer	void
getFootageExposure(layer, accuracy, tolerance, r, g, b, a)	Gets the animation exposure of the footage	Array of float
addEffect(layer, effectMatchName)	Adds a pseudo effect from Duik on the layer	Property
getLayerByName(layers, name)	Gets the first layer which name contains the given name	Layer
getLayerByNames(layrs, names)	Gets the first layer which name contains one of the given names	Layer
getLayersByName(layers, name)	Gets all the layer which names contain one of the given names	Array of Layer
getLayersByNames(layrs, names)	Gets all the layers which names contain one of the given names	Array of Layer
sortByDistance(layers, from)	Sorts and returns the Array of layers depending on their distance from a given layer	Array of Layer
getWorldPos(layer)	Gets the world position of the layer	Array of float
sortLayersByIndex(layers)	Sorts the layers in the Array or Collection according to their index	Array

Name	Description	Return
hexColorToRVB(hexColor, isString)	Converts hexadecimal color to RVB Array	Array of float
rvbColorToHex(rvbColor)	Converts RVB Array to hexadecimal color	string

• Duik.utils.prepareProperty (property,isFX,index,depth,parentName)

Prepare the given property to be rigged.
isFX, *index*, *depth*, *parentName* will be filled by the method with the values corresponding to this property.

parameters:
property | Property
isFX | boolean
index | integer
depth | integer
parentName | string

returns
true if property can set expression, false otherwise

• Duik.utils.getPropertyDimensions (property)

Gets the dimensions of the property (1, 2 or 3), taking care of 2D layer positions (reported as 3D by AFX, but to be considdered as 2D)

parameters:
property | Property

returns
integer, number of dimensions

• Duik.utils.getLength (value1, value2)

Gets the length between the values, whichever dimensions they are

parameters:
value1 | float or Array of float, first coordinates
value1 | float or Array of float, second coordinates

returns
float, length between the values

• Duik.utils.getAverageSpeed (layer, property)

Gets the average speed of the animated property, between its first and last keyframe only.

parameters:
layer | AVLayer of the property
property | Property

returns
float, average speed of the property

• Duik.utils.addPseudoEffect (layer, pseudoEffectFileName)

Adds a Duik predefined pseudo effect to the layer. The AFX preset file of the pseudo effect must be located in the same folder as libDuik.jsxinc and called « Duik_ » + pseudoEffectName + « .ffx ».
In the preset, the effect must be called pseudoEffectName.

parameters:
layer | AVLayer
pseudoEffectFileName | string, name of the file of the pseudo effect

returns
Property, the effect added

• Duik.utils.getDistance (layer1,layer2)

Measures distance between two layers, in pixels.

parameters:
layer1 | AVLayer
layer2 | AVLayer

returns
integer, distance in pixels

• Duik.utils.getPuppetPins (effects)

Recursive method to find all puppet pins on a given layer, even if there is more than one puppet effect. You must provide the effects PropertyGroup of the layer.
Example : var pins = Duik.utils.getPuppetPins(app.project.activeItem.layer(1)(« Effects »);

parameters:
effects | PropertyGroup, the effects group of a layer

returns
Array of Property, the puppet pins

• Duik.utils.rigProperty (layer, prop, pseudoEffect)

Performs some checks on the property and adds a pseudo effect on the layer.
The AE preset file of the pseudo effect must be located in the same folder as libDuik.jsxinc and called « *Duik_* » + *pseudoEffectName* + « *.ffx* ».
In the preset, the effect must be called pseudoEffectName.

parameters:
layer | AVLayer
prop | Property
pseudoEffect | file name of the pseudo effect

returns
PropertyGroup, the effect added

• Duik.utils.deselectLayers
()

Deselects all layers

returns
void

• Duik.utils.checkNames
(comp)

Checks for duplicate names among the layers of the comp, renaming them if found. This method is called everytime libDuik creates an effect which involves expressions and more than one layer, to avoid any bug with expressions linking to wrong layers.

parameters:
comp | CompItem where are the layers which must be checked. Default: app.project.activeItem

returns
true if any layer was renamed, false otherwise.

• Duik.utils.getItem
(items, itemIndex)

After effects sometimes uses its own Collection class, which is very similar to Arrays, but the first element of a Collection is at index 1 instead of 0 as in an Array.

This can make it difficult to write functions which will work both on Array or Collections.

Example:

```
function doSomethingOnLayers(layers) {
        for (i = 0 ; i < layers.length ; i++) {
                var layer = layers[i];
                //do something
        }
}

//will work correctly, as selectedLayers is an Array beginning at index 0
doSomethingOnLayers(app.project.activeItem.selectedLayers);

//will not work, as layers is a LayerCollection beginning at index 1
doSomethingOnLayers(app.project.activeItem.layers);
```

This method makes it possible to get an item both for an Array or a Collection, without knowing which type is given.

```
function doSomethingOnLayers(layers) {
        for (i = 0 ; i < layers.length ; i++) {
                var layer = Duik.utils.getItem(layers,i);
                //do something
        }
}

//both will work correctly
doSomethingOnLayers(app.project.activeItem.selectedLayers);
doSomethingOnLayers(app.project.activeItem.layers);
```

parameters:
items | Array or Collection
itemIndex | int, index where the item must be found

returns
Object, the item at itemIndex in items.

• Duik.utils.getKey (prop, keyIndex)

Gets the keyframe at keyIndex on the property
see *KeyFrame object*

parameters:
prop | Property
keyIndex | int

returns
KeyFrame object

• Duik.utils.getPropertyAnims (prop, selectedKeysOnly, startTime, endTime)

Gets the keyframe animations on the child properties of the prop, if it's a PropertyGroup (recursive), or the animation of the prop if it's a Property, beginning at startTime and ending at endTime.
This is a recursive method.
see *PropertyAnim object*

parameters:
prop | PropertyBase
selectedKeysOnly | boolean
startTime | float
endTime | float

returns
Array of PropertyAnim objects

• Duik.utils.getPropertyAnim (prop, selectedKeysOnly, startTime, endTime)

Gets the keyframe animation of the Property
This is not a recursive method (it won't check child properties); see *Duik.utils.getPropertyAnims()* for the recursive method.
see *PropertyAnim object*

parameters:
prop | Property
selectedKeysOnly | boolean
startTime | float
endTime | float

returns
PropertyAnim object

• Duik.utils.setPropertyAnim (prop, propAnim, startTime)

Sets the animation on the property, beginning at startTime
see *PropertyAnim object*

parameters:
prop | PropertyBase
propAnim | PropertyAnim object
startTime | float

returns
boolean, true if succeeded.

• Duik.utils.addKey (prop,key, startTime)

Adds a keyframe on the property. You can offset the time by setting startTime
see *KeyFrame object*

parameters:
prop | PropertyBase
key | KeyFrame object
startTime | float, default: 0

returns
void

• Duik.utils.getFirstKeyTime (prop)

Gets the time of the first key on the property.

parameters:
prop | Property

returns
float

• Duik.utils.hasSelectedKeys (prop)

Checks if the properties has keyframes which are selected.

parameters:
prop | Property

returns
boolean

• Duik.utils.convertCollectionToArray (collection)

Converts the given Collection to an array. If the parameter is already an Array, returns a copy of it.

parameters:
collection | Collection or Array

returns
Array

• Duik.utils.prepIK
(layers)

Creates an *IKRig* object, automatically detecting each layer usage.
The detection checks the hierarchy of the layers to find each layer usage.
If the detection fails, the *IKRig* object is created using the order of the layers in the Array or LayerCollection: the first are the layers, beginning by the last child, the last one is the controller.
Goal layers are detected by measuring the distance between the last child of the chain and the controller: goal layers and controllers should be at the same place.
See *IKRig object*.

parameters:
layers | Array of AVLayers or LayerCollection

returns
IKRig object

• Duik.utils.getControllers
(layers)

Gets the controllers created by Duik found in the Array or LayerCollection. If the Array or the LayerCollection are empty, or if not provided, gets the controllers found in the active comp.
See *Controller object*.

parameters:
layers | Array of AVLayers or LayerCollection

returns
Array of Controller objects

• Duik.utils.getAverageSpeed
(layer, property)

Gets the average speed of the animated property, between its first and last keyframe only.

parameters:
layer | AVLayer of the property
property | Property

returns
float, average speed of the property

• Duik.utils.replaceInLayersExpressions
(layers, oldString, newString)

Replaces all occurences of oldString by newString in all the expressions of all the layers.

parameters
layers | Array of AVLayers or LayerCollection
oldString | string
newString | string

returns
void

• Duik.utils.renameLayer
(layer, newName, updateExpressions, currentCompOnly)

Renames the layer, updating expressions in all the compositions of the project.

parameters
layer | Layer
newName | string
updateExpressions | boolean, default: true
currentCompOnly | boolean, default: false

returns
void

• Duik.utils.renameItem
(item, newName, updateExpressions)

Renames the item, updating expressions in all the compositions of the project if the item is a CompItem

parameters
item | Item
newName | string
updateExpressions | boolean, default: true

returns
void

• Duik.utils.layersHaveSelectedKeys
(layers)

Checks if there are selected animation keyframes on the layers.

parameters
layers | Array of Layers or LayerCollection

returns
boolean

• Duik.utils.renameEffect
(effect,name)

Renames the effect, making sure there are not two effects that share the same name on the layer.

parameters
effect | PropertyGroup
name | String

returns
void

• Duik.utils.getFootageExposure (layer, accuracy, tolerance, r, g, b, a)

Gets the animation exposure from a footage. The accuracy influences the speed of the detection.

parameters
layer | AVLayer
accuracy | float from 0.0 to 100.0, default: 50
tolerance | float from 0.0 to 100.0, default: 10
r | boolean, default: true
g | boolean, default: true
b | boolean, default: true
a | boolean, default: false

returns
Array of float, the times when the animation changes

• Duik.utils.stepSelectedProperties (layers)

Changes the keyframes of the selected properties to hold.

parameters
layers | Array of Layers or LayerCollection

returns
void

• Duik.utils.addEffect (layer, effectMatchName)

Adds a pseudo effect from Duik on the layer

parameters
layer | AVLayer
effectMatchName | string

returns
Property, the effect added

• Duik.utils.getLayerByName (layers, name)

Gets the first layer which name contains the given name

parameters
layers | Array of Layer or LayerCollection
name | string

returns
Layer

• Duik.utils.getLayerByNames (layrs, names)

Gets the first layer which name contains one of the given names

parameters
layers | Array of Layer or LayerCollection
names | Array of string

returns
Layer

• Duik.utils. getLayersByName (layers, name)

Gets all the layer which names contain one of the given names

parameters
layers | Array of Layer or LayerCollection
name | string

returns
Array of Layer

• Duik.utils. getLayersByNames (layrs, names)

Gets all the layers which names contain one of the given names

parameters
layers | Array of Layer or LayerCollection
names | Array of string

returns
Array of Layer

• Duik.utils.sortByDistance (layers, from)

Sorts and returns the Array of layers depending on their distance from a given layer

parameters
layers | Array of Layer or LayerCollection
from | Layer

returns
Array of Layer

• Duik.utils.getWorldPos (layer)

Gets the world position of the layer

parameters
layer | Layer

returns
Arary of float, [X,Y,Z]

• Duik.utils.sortLayersByIndex (layers)

Sorts the layers in the Array or Collection according to their index.

parameters
layers | Array of Layer or LayerCollection

returns
Arary of Layer

• Duik.utils.hexColorToRVB (hexColor, isString)

Converts hexadecimal color to RVB Array.

parameters
hexColor | string or hex
isString | true if hexColor is a string, false of it is hex number

returns
Array of float [R,V,B]

• Duik.utils.rvbColorToHex (rvbColor)

Converts RVB array to hex string, without a leading "#"

parameters
rvbColor | Array of float [R,V,B]

returns
string

DUIK.AUTORIG

This is the object used to automatically rig a lot of different animals.

All methods are available in their corresponding objects, but there are aliases to make them easier to use.

Example:
Duik.autorig.vertebrate.digitigrade
is equivalent to:
Duik.autorig.digitigrade

All methods are used the same way: you only have to provide the needed and optionnal layers (the anchor points must be correctly placed); the methods return the Controller objects created.
In this documentation, needed layers are shown **bold**, other layers are optionnal and can be *undefined* or *null*.

Duik.autorig.vertebrate

- ***spine(hips, spine,** neck**, head)***
  hips OR spine are needed.
  head is needed.

  Spine and *neck* are Arrays of Layers. The order must be: from the head to the hips.

  Aliases
  Duik.autorig.vertebrate.digitigrade.spine
  Duik.autorig.vertebrate.plantigrade.spine
  Duik.autorig.vertebrate.ungulate.spine

- ***tail(hips, tail,** cubic**)***
  hips is needed.
  tail is needed.

  tail is an Array of Layers. The order must be: from the end to the hips.

  cubic is a boolean, if *true*, there will be two middle controllers instead of one. Default is *false*.

  Aliases
  Duik.autorig.vertebrate.digitigrade.tail
  Duik.autorig.vertebrate.plantigrade.tail
  Duik.autorig.vertebrate.ungulate.tail

Duik.autorig.vertebrate.plantigrade

Alias: Duik.autorig.plantigrade

- ***frontLeg(**shoulder, humerus, radius, **carpus,** claws, tiptoe, palm**)***
  carpus is needed
  If there is *claws*, *humerus* and *radius* are needed

- ***backLeg(**femur,tibia,**tarsus**,claws,tiptoe,heel**)***
  tarpus is needed
  If there is *claws*, *femur* and *tibia* are needed

Duik.autorig.vertebrate.digitigrade

Alias: Duik.autorig.digitigrade

- ***frontLeg(****shoulder, humerus, radius,* ***carpus,*** *claws, tiptoe****)***
  carpus is needed
  If there is *claws*, *humerus* and *radius* are needed

- ***backLeg(****femur,tibia,****tarsus****,****claws,tiptoe****)***
  tarpus is needed
  If there is *claws*, *femur* and *tibia* are needed

Duik.autorig.vertebrate.ungulate

Alias: Duik.autorig.ungulate

- ***frontLeg(****shoulder, humerus, radius,* ***carpus,*** *claws****)***
  carpus is needed
  If there is *claws*, *humerus* and *radius* are needed

- ***backLeg(****femur,tibia,****tarsus****,****claws****)***
  tarpus is needed
  If there is *claws*, *femur* and *tibia* are needed