FCurve(bpy_struct)

base class — bpy_struct

class bpy.types.**FCurve(bpy_struct)**

F-Curve defining values of a period of time

array_index

Index to the specific property affected by F-Curve if applicable

TYPE:

int in [0, inf], default 0

auto_smoothing

Algorithm used to compute automatic handles

TYPE:

enum in Fcurve Auto Smoothing Items, default 'NONE'

color

Color of the F-Curve in the Graph Editor

TYPE:

mathutils.Color of 3 items in [0, 1], default (0.0, 0.0, 0.0)

color_mode

Method used to determine color of F-Curve in Graph Editor

- AUTO_RAINBOW Auto Rainbow – Cycle through the rainbow, trying to give each curve a unique color.
- AUTO_RGB Auto XYZ to RGB – Use axis colors for transform and color properties, and auto-rainbow for the rest.
- AUTO_YRGB Auto WXYZ to YRGB – Use axis colors for XYZ parts of transform, and yellow for the 'W' channel.
- CUSTOM User Defined – Use custom hand-picked color for F-Curve.

TYPE:

enum in ['AUTO_RAINBOW', 'AUTO_RGB', 'AUTO_YRGB', 'CUSTOM'], default 'AUTO_RAINBOW'

data_path

RNA Path to property affected by F-Curve

TYPE:

string, default '', (never None)

driver

Channel Driver (only set for Driver F-Curves)

TYPE:

Driver, (readonly)

extrapolation

Method used for evaluating value of F-Curve outside first and last keyframes

- CONSTANT Constant – Hold values of endpoint keyframes.
- LINEAR Linear – Use slope of curve leading in/out of endpoint keyframes.

TYPE:

enum in ['CONSTANT', 'LINEAR'], default 'CONSTANT'

group

Action Group that this F-Curve belongs to

TYPE:

ActionGroup

hide

F-Curve and its keyframes are hidden in the Graph Editor graphs

TYPE:

boolean, default False

is_empty

True if the curve contributes no animation due to lack of keyframes or useful modifiers, and should be deleted

TYPE:

boolean, default False, (readonly)

is_valid

False when F-Curve could not be evaluated in past, so should be skipped when evaluating

TYPE:

boolean, default False

keyframe_points

User-editable keyframes

TYPE:

FCurveKeyframePoints bpy_prop_collection of Keyframe, (readonly)

lock

F-Curve's settings cannot be edited

TYPE:

boolean, default False

modifiers

Modifiers affecting the shape of the F-Curve

TYPE:

FCurveModifiers bpy_prop_collection of FModifier, (readonly)

mute

Disable F-Curve evaluation

TYPE:

boolean, default False

sampled_points

Sampled animation data

TYPE:

bpy_prop_collection of FCurveSample, (readonly)

select

F-Curve is selected for editing

TYPE:

boolean, default False

evaluate(frame)

Evaluate F-Curve

PARAMETERS:

frame (*float in [-inf, inf]*) – Frame, Evaluate F-Curve at given frame

RETURNS:

Value, Value of F-Curve specific frame

RETURN TYPE:

float in [-inf, inf]

update()

Ensure keyframes are sorted in chronological order and handles are set correctly

range()

Get the time extents for F-Curve

RETURNS:

Range, Min/Max values

RETURN TYPE:

`mathutils.Vector` of 2 items in [-inf, inf]

update_autoflags(data)

Update FCurve flags set automatically from affected property (currently, integer/discrete flags set when the property is not a float)

PARAMETERS:

data (`AnyType` , (never None)) – Data, Data containing the property controlled by given FCurve

convert_to_samples(start, end)

Convert current FCurve from keyframes to sample points, if necessary

PARAMETERS:

- **start** (*int in [-1048574, 1048574]*) – Start Frame
- **end** (*int in [-1048574, 1048574]*) – End Frame

convert_to_keyframes(start, end)

Convert current FCurve from sample points to keyframes (linear interpolation), if necessary

PARAMETERS:

- **start** (*int in [-1048574, 1048574]*) – Start Frame
- **end** (*int in [-1048574, 1048574]*) – End Frame

bake(start, end, *, step=1.0, remove='IN_RANGE')

Place keys at even intervals on the existing curve.

PARAMETERS:

- **start** (*int in [-1048574, 1048574]*) – Start Frame, Frame at which to start baking
- **end** (*int in [-1048574, 1048574]*) – End Frame, Frame at which to end baking (inclusive)
- **step** (*float in [0.01, inf], (optional, optional argument)*) – Step, At which interval to add keys
- **remove** (*enum in ['NONE', 'IN_RANGE', 'OUT_RANGE', 'ALL'], (optional)*) –
  Remove Options, Choose which keys should be automatically removed by the bake
  - `NONE` None – Keep all keys.

- `IN_RANGE` In Range – Remove all keys within the defined range.
- `OUT_RANGE` Outside Range – Remove all keys outside the defined range.
- `ALL` All – Remove all existing keys.

classmethod bl_rna_get_subclass(id, default=None)

PARAMETERS:

id (*str*) – The RNA type identifier.

RETURNS:

The RNA type or default when not found.

RETURN TYPE:

`bpy.types.Struct` subclass

classmethod bl_rna_get_subclass_py(id, default=None)

PARAMETERS:

id (*str*) – The RNA type identifier.

RETURNS:

The class or default when not found.

RETURN TYPE:

type

Inherited Properties

- `bpy_struct.id_data`

Inherited Functions

- `bpy_struct.as_pointer`
- `bpy_struct.driver_add`
- `bpy_struct.driver_remove`
- `bpy_struct.get`
- `bpy_struct.id_properties_clear`
- `bpy_struct.id_properties_ensure`
- `bpy_struct.id_properties_ui`
- `bpy_struct.is_property_hidden`
- `bpy_struct.is_property_overridable_library`
- `bpy_struct.is_property_readonly`
- `bpy_struct.is_property_set`
- `bpy_struct.items`
- `bpy_struct.keyframe_delete`
- `bpy_struct.keyframe_insert`
- `bpy_struct.keys`
- `bpy_struct.path_from_id`
- `bpy_struct.path_resolve`
- `bpy_struct.pop`
- `bpy_struct.property_overridable_library_set`
- `bpy_struct.property_unset`
- `bpy_struct.type_recast`
- `bpy_struct.values`

References

- `bpy.context.active_editable_fcurve`
- `bpy.context.editable_fcurves`
- `bpy.context.selected_editable_fcurves`
- `bpy.context.selected_visible_fcurves`
- `bpy.context.visible_fcurves`
- `Action.fcurve_ensure_for_datablock`
- `ActionFCurves.new`
- `ActionFCurves.remove`
- `ActionGroup.channels`
- `AnimData.drivers`
- `AnimDataDrivers.find`
- `AnimDataDrivers.from_existing`

- Action.fcurves
- ActionChannelbag.fcurves
- ActionChannelbagFCurves.find
- ActionChannelbagFCurves.new
- ActionChannelbagFCurves.remove
- ActionFCurves.find
- AnimDataDrivers.from_existing
- AnimDataDrivers.new
- AnimDataDrivers.remove
- NlaStrip.fcurves
- NlaStripFCurves.find