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Curve(ID)

base classes — `bpy_struct`, `ID`

subclasses — `SurfaceCurve`, `TextCurve`

class bpy.types.**Curve(ID)**

Curve data-block storing curves, splines and NURBS

animation_data

Animation data for this data-block

TYPE:

`AnimData`, (readonly)

bevel_depth

Radius of the bevel geometry, not including extrusion

TYPE:

float in [-inf, inf], default 0.0

bevel_factor_end

Define where along the spline the curve geometry ends (0 for the beginning, 1 for the end)

TYPE:

float in [0, 1], default 1.0

bevel_factor_mapping_end

Determine how the geometry end factor is mapped to a spline

- `RESOLUTION` Resolution – Map the geometry factor to the number of subdivisions of a spline (U resolution).
- `SEGMENTS` Segments – Map the geometry factor to the length of a segment and to the number of subdivisions of a segment.
- `SPLINE` Spline – Map the geometry factor to the length of a spline.

TYPE:

enum in ['RESOLUTION', 'SEGMENTS', 'SPLINE'], default 'RESOLUTION'

bevel_factor_mapping_start

Determine how the geometry start factor is mapped to a spline

- `RESOLUTION` Resolution – Map the geometry factor to the number of subdivisions of a spline (U resolution).
- `SEGMENTS` Segments – Map the geometry factor to the length of a segment and to the number of subdivisions of a segment.
- `SPLINE` Spline – Map the geometry factor to the length of a spline.

TYPE:

enum in ['RESOLUTION', 'SEGMENTS', 'SPLINE'], default 'RESOLUTION'

bevel_factor_start

Define where along the spline the curve geometry starts (0 for the beginning, 1 for the end)

TYPE:

float in [0, 1], default 0.0

bevel_mode

Determine how to build the curve's bevel geometry

- `ROUND` Round – Use circle for the section of the curve's bevel geometry

- ROUND Round – Use circle for the section of the curve's bevel geometry.
- OBJECT Object – Use an object for the section of the curve's bevel geometry segment.
- PROFILE Profile – Use a custom profile for each quarter of curve's bevel geometry.

TYPE:

enum in ['ROUND', 'OBJECT', 'PROFILE'], default 'ROUND'

bevel_object

The name of the Curve object that defines the bevel shape

TYPE:

Object

bevel_profile

The path for the curve's custom profile

TYPE:

CurveProfile, (readonly)

bevel_resolution

The number of segments in each quarter-circle of the bevel

TYPE:

int in [0, 32], default 4

cycles

Cycles mesh settings

TYPE:

CyclesMeshSettings, (readonly)

dimensions

Select 2D or 3D curve type

- 2D 2D – Clamp the Z axis of the curve.
- 3D 3D – Allow editing on the Z axis of this curve, also allows tilt and curve radius to be used.

TYPE:

enum in ['2D', '3D'], default '2D'

eval_time

Parametric position along the length of the curve that Objects 'following' it should be at (position is evaluated by dividing by the 'Path Length' value)

TYPE:

float in [-inf, inf], default 0.0

extrude

Length of the depth added in the local Z direction along the curve, perpendicular to its normals

TYPE:

float in [0, inf], default 0.0

fill_mode

Mode of filling curve

TYPE:

enum in ['FULL', 'BACK', 'FRONT', 'HALF'], default 'FULL'

is_editmode

True when used in editmode

TYPE:

boolean, default False, (readonly)

materials

TYPE:

IDMaterials bpy_prop_collection of Material, (readonly)

offset

Distance to move the curve parallel to its normals

TYPE:

float in [-inf, inf], default 0.0

path_duration

The number of frames that are needed to traverse the path, defining the maximum value for the 'Evaluation Time' setting

TYPE:

int in [1, 1048574], default 100

render_resolution_u

Surface resolution in U direction used while rendering (zero uses preview resolution)

TYPE:

int in [0, 1024], default 0

render_resolution_v

Surface resolution in V direction used while rendering (zero uses preview resolution)

TYPE:

int in [0, 1024], default 0

resolution_u

Number of computed points in the U direction between every pair of control points

TYPE:

int in [1, 1024], default 12

resolution_v

The number of computed points in the V direction between every pair of control points

TYPE:

int in [1, 1024], default 12

shape_keys

TYPE:

Key, (readonly)

splines

Collection of splines in this curve data object

TYPE:

CurveSplines bpy_prop_collection of Spline, (readonly)

taper_object

Curve object name that defines the taper (width)

TYPE:

Object

taper_radius_mode

Determine how the effective radius of the spline point is computed when a taper object is specified

- OVERRIDE Override – Override the radius of the spline point with the taper radius.
- MULTIPLY Multiply – Multiply the radius of the spline point by the taper radius.
- ADD Add – Add the radius of the bevel point to the taper radius.

TYPE:

enum in ['OVERRIDE', 'MULTIPLY', 'ADD'], default 'OVERRIDE'

texspace_location

TYPE:

mathutils.Vector of 3 items in [-inf, inf], default (0.0, 0.0, 0.0)

texspace_size

TYPE:

mathutils.Vector of 3 items in [-inf, inf], default (1.0, 1.0, 1.0)

twist_mode

The type of tilt calculation for 3D Curves

- Z_UP Z-Up – Use Z-Up axis to calculate the curve twist at each point.
- MINIMUM Minimum – Use the least twist over the entire curve.
- TANGENT Tangent – Use the tangent to calculate twist.

TYPE:

enum in ['Z_UP', 'MINIMUM', 'TANGENT'], default 'MINIMUM'

twist_smooth

Smoothing iteration for tangents

TYPE:

float in [-inf, inf], default 0.0

use_auto_texspace

Adjust active object's texture space automatically when transforming object

TYPE:

boolean, default True

use_deform_bounds

Option for curve-deform: Use the mesh bounds to clamp the deformation

TYPE:

boolean, default False

use_fill_caps

Fill caps for beveled curves

TYPE:

boolean, default False

use_map_taper

Map effect of the taper object to the beveled part of the curve

TYPE:

boolean, default False

use_path

Enable the curve to become a translation path

TYPE:

boolean, default False

use_path_clamp

Clamp the curve path children so they can't travel past the start/end point of the curve

TYPE:

boolean, default False

use_path_follow

Make curve path children rotate along the path

TYPE:

boolean, default False

use_radius

Option for paths and curve-deform: apply the curve radius to objects following it and to deformed objects

TYPE:

boolean, default True

use_stretch

Option for curve-deform: make deformed child stretch along entire path

TYPE:

boolean, default False

transform(matrix, *, shape_keys=False)

Transform curve by a matrix

PARAMETERS:

- **matrix** (`mathutils.Matrix` of 4 * 4 items in [-inf, inf]) – Matrix
- **shape_keys** (*boolean, (optional)*) – Transform Shape Keys

validate_material_indices()

Validate material indices of splines or letters, return True when the curve has had invalid indices corrected (to default 0)

RETURNS:

Result

RETURN TYPE:

boolean

update_gpu_tag()

update_gpu_tag

classmethod bl_rna_get_subclass(id, default=None)

PARAMETERS:

id (*str*) – The RNA type identifier

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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`
- `ID.name`
- `ID.name_full`
- `ID.id_type`
- `ID.session_uid`
- `ID.is_evaluated`
- `ID.original`
- `ID.users`
- `ID.use_fake_user`
- `ID.use_extra_user`
- `ID.is_embedded_data`
- `ID.is_missing`
- `ID.is_runtime_data`
- `ID.is_editable`
- `ID.tag`
- `ID.is_library_indirect`
- `ID.library`
- `ID.library_weak_reference`
- `ID.asset_data`
- `ID.override_library`
- `ID.preview`

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.type_recast`
- `bpy_struct.values`
- `ID.rename`
- `ID.evaluated_get`
- `ID.copy`
- `ID.asset_mark`
- `ID.asset_clear`
- `ID.asset_generate_preview`
- `ID.override_create`
- `ID.override_hierarchy_create`
- `ID.user_clear`
- `ID.user_remap`
- `ID.make_local`
- `ID.user_of_id`
- `ID.animation_data_create`
- `ID.animation_data_clear`
- `ID.update_tag`

- bpy_struct.pop
- bpy_struct.property_overridable_library_set
- bpy_struct.property_unset
- ID.preview_ensure
- ID.bl_rna_get_subclass
- ID.bl_rna_get_subclass_py

References

- bpy.context.curve
- BlendData.curves
- BlendDataCurves.new
- BlendDataCurves.remove
- Object.to_curve