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User's Guide

to the SOLID Collision Detection Library

last updated 28 December 2003
for version 3.5

1 License

This open-source edition of SOLID version 3 is released under the terms of either the

2 Introduction

SOLID is a software library containing functions for performing intersection tests and proximity queries that are useful in the context of collision detection. Collision detection is the process of detecting pairs of geometric objects that are intersecting or are within

2. The broad phase: A set of C++

-

4 The SOLID API

A stride of zero denotes that the vertex coordinate data is packed in a separate array, thus

```
DT_Vector3 verts[NUM_VERTICES];
```

```
DT_VertexBaseHandle base = DT_NewVertexBase(verts[0], 0);
```

Each time the vertices are updated, or a new vertex base is assigned, to a complex shape, for instance, when using a deformable triangle mesh, the client needs to notify SOLID of a changed vertex array by calling `DT_ChangeVertexBase`. We discuss the use of this command further on.

The placement of an object is changed, either by setting the position, orientation, and scaling, or by using an OpenGL 4x4 column-major matrix representing an affine transformation. Placements are specified relative to the world coordinate system. Rotations are specified using quaternions. The object's local coordinate system can be scaled non-


```
void DT_SetTolerance(DT_Scalar tol_error);
```

This value is the estimated relative rounding error in complex computations and is used for determining whether a floating-point number should be regarded as zero or not. The default value for 'tol_error' is the machine epsilon, which is FLT_EPSILON when floats are used, and DBL_EPSILON

```
void *client_object1,  
void *client_object2,  
const DT_CollData *coll_data);
```

Here, `client_data` is a pointer to an arbitrary structure in the client application, `client_object1` and `client_object2` are the pointers to structures in the client application specified in `DT_CreateObject`, and `l_data` is the response data computed by SOLID. The Boolean value returned by a callback

```
void DT_SetResponseClass(DT_RespTableHandle respTable,  
                        DT_ObjectHandle object,  
                        DT_ResponseClass responseClass);
```

For each pair of objects multiple responses can be defined. A response is a callback together with its response type and client data. The DT_ResponseType-441(e)-1(ac)28(h)-89.5450Td[DT_Respont_ObjectHandlep71.816r780a6-12num D

5 Projects and other things left to do

5.1 Coming Attractions

SOLID 4 will have the following added features:

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Version 2, June 1991

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