Geometric Tools Engine Update History

Last modified: September 15, 2020

Contents

1 Version 5.0 **2**

The version release dates are listed here. Versions released before the current version may be obtained by email request.

- Version 5.0 posted September 15, 2020.

The updated files and related notes are provided for the versions in each of the ensuing sections. Each section has a list of changes that occurred to the version number mentioned in that section. Those changes were rolled up into the zip file that was posted for the next version. Modified files are colored gold, new files are colored green and deleted files are colored red. Source code is colored Violet.

1 Version 5.0

September 15, 2020. This version is a transition from the Geometric Tools Engine version 4.9 to mark the posting of the source code to GitHub. The mathematics code is in a header-only library (GTMathematics). A mathematics library with GPU-based implementations is provided (GTMathematicsGPU). The CPU-based common graphics engine code is in its own library (GTGraphics). DirectX 11 wrappers are provided for graphics (GTGraphicsDX11) and applications (GTApplicationsDX11). OpenGL 4.5 wrappers are provided for graphics (GTGraphicsGL45) and applications (GTApplicationsGL45).

The following updates are the final modifications to GTE 4.9 to obtain the GTE 5.0 distribution.

September 14, 2020. Initialized some std::array objects to avoid warnings by gcc 10.2.1 on Fedora 32 for potentially uninitialized variables. The variables are initialized, but the compiler cannot determine this solely from the code.

GTE/Mathematics/IntpQuadraticNonuniform2.h

Bypassed a couple of TriangleKey<true> constructor calls to avoid a warning by gcc 7.5.0 on Ubuntu 18.04.5 LTS regarding assumptions on strict overflow.

GTE/Samples/Imagics/AdaptiveSkeletonClimbing3.h

September 11, 2020. Updated the C#/C++ managed code projects to call the new interfaces for MinimumVolumeBox3.

GTE/Samples/CSharpCppManaged/CppLibrary/MinimumVolumeBox.{h,cpp}
GTE/Samples/CSharpCppManaged/ManagedLibrary/MinimumVolumeBox.{h,cpp}
GTE/Samples/CSharpCppManaged/CSharpApplication/Program.cs

September 11, 2020. The TIQuery code had logic:

```
if (fmid <= zero) { block0 } else if (fmid == zero) { block1 }
```

so block1 is dead code. The logic was modified to

```
if (fmid < zero) { block0 } else if (fmid == zero) { block1 }
```

September 8, 2020. Added operator+=, operator-=, operator*= and operator/= functions to support Vector<N,T> where T is FPInterval<T> or APInterval<T>.

GTE/Mathematics/APInterval.h
GTE/Mathematics/FPInterval.h

September 7, 2020. Removed a couple of commented lines that were part of the debugging and testing of the code. The virtual minimizer functions needed to be in protected scope.

GTE/Mathematics/MinimumVolumeBox3.h