# PA1 – Playing with Embree

Embree Usage

- **High performance ray tracing kernel**
  - **Intel's ray tracing kernel optimized for Intel processors**

- **Various kind of simulations**
  - **Lighting, sound, particles, collision detection, etc.)**

Embree: A Kernel Framework for Efficient CPU Ray Tracing (SIGGRAPH 2014)

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Installation

- **Installing Embree Binary**
  - **Access https://www.embree.org/**

Model Courtesy of Martin Lubich (www.loramel.net)
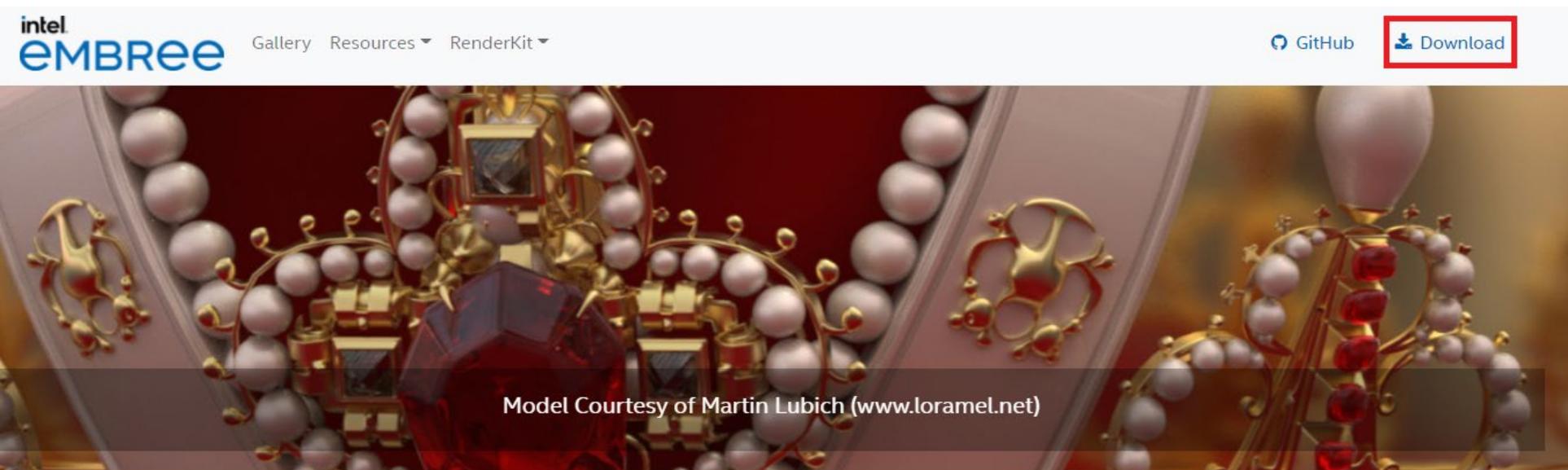
Installation

Embree v4.3.3 [Latest]

- Added RTCError RTC_ERROR_LEVEL_ZERO_RAYTRACING_SUPPORT_MISSING which can indicate a GPU driver that is too old or not installed properly.
- Added the API function rtcGetDeviceLastErrorMessage to query additional information about the last RTCError returned by rtcGetDeviceError. This can be used in case device creation failed and a rtcErrorFunction could not be set up for this purpose.
- Added the API function rtcGetErrorString which returns a string representation of a given RTCError error code. This is purely meant for convenient error information reporting on the user application side.
- Performance improvements on GPU for the one level instancing case (RTC_MAX_INSTANCE_LEVEL_COUNT 1).
- Reduced the number of unneccessary GPU-CPU USM back-migrations which can increase build performance for scene with many instances on GPU.
- Started adding public CI tests for streamlining integration of external pull requests.
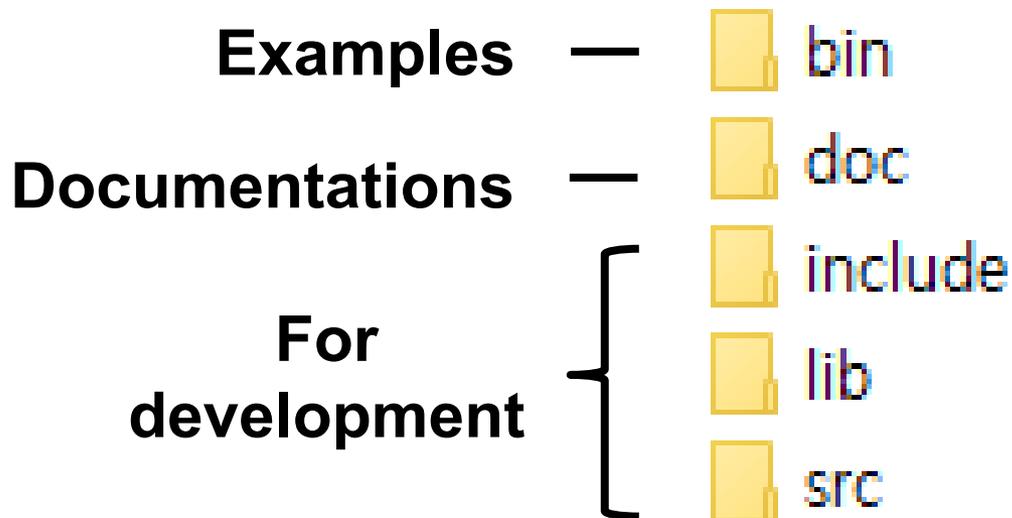- Work-around for problem with unsigned Windows binaries.

▼ Assets (9)

Binary for Win/ Linux/ Mac

embree-4.3.3-testing.tar.gz	51.7 MB	Jul 22
embree-4.3.3.arm64.macosx.zip	55.9 MB	Jul 22
embree-4.3.3.sycl.x64.windows.zip	124 MB	Jul 22
embree-4.3.3.sycl.x86_64.linux.tar.gz	122 MB	Jul 22
embree-4.3.3.x64.windows.zip	72.9 MB	Jul 22
embree-4.3.3.x86_64.linux.tar.gz	71.4 MB	Jul 22
embree-4.3.3.x86_64.macosx.zip	70.8 MB	Jul 22

Source

| Source code (zip) | | Jul 22 |
| Source code (tar.gz) | | Jul 22 |

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Example : **Windows – 64-bit**

- **Contents of embree-4.3.3.x64.windows.zip**

Examples —— 📁 bin

Documentations —— 📁 doc

For
development { 📁 include
📁 lib
📁 src

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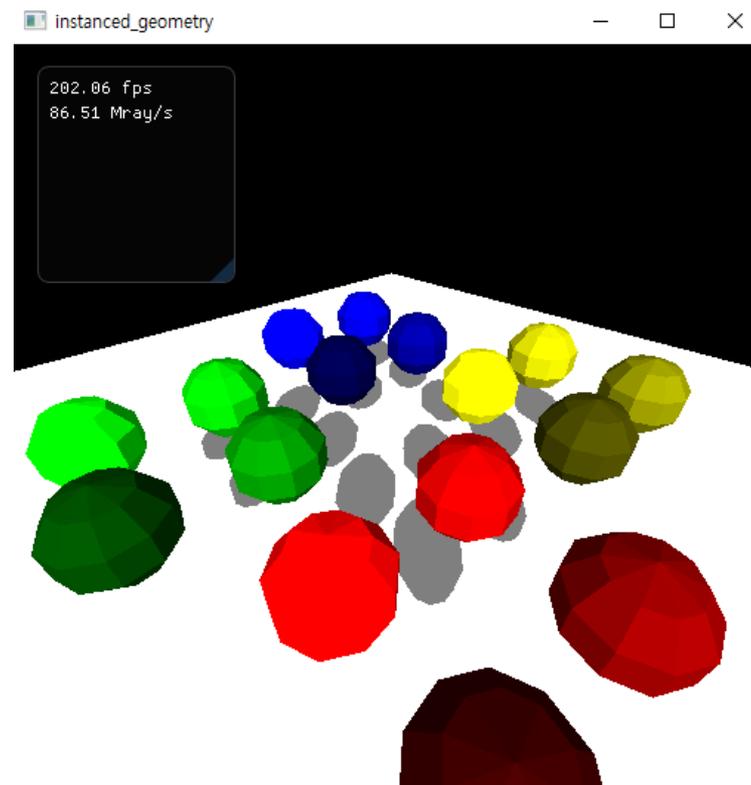# Playing with Embree
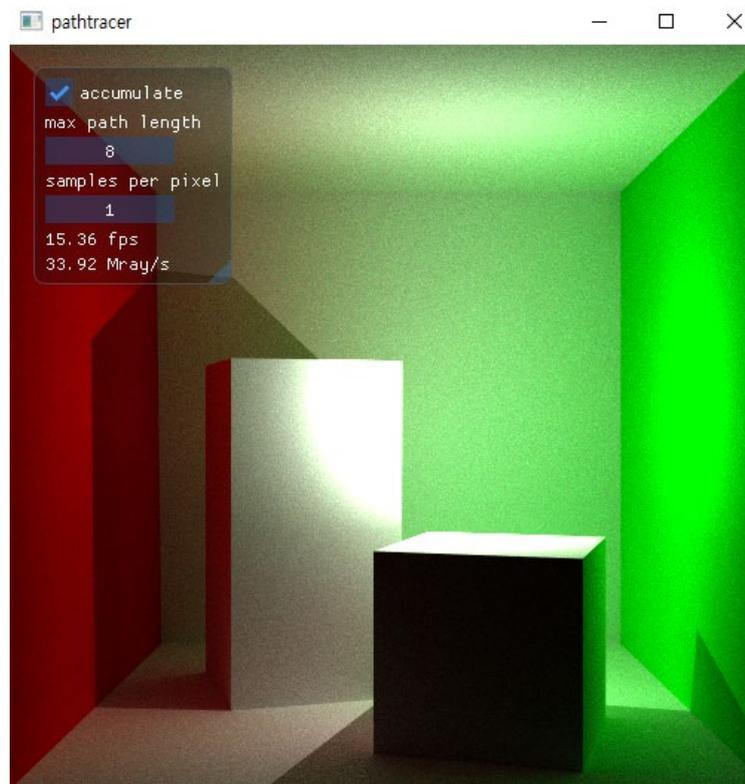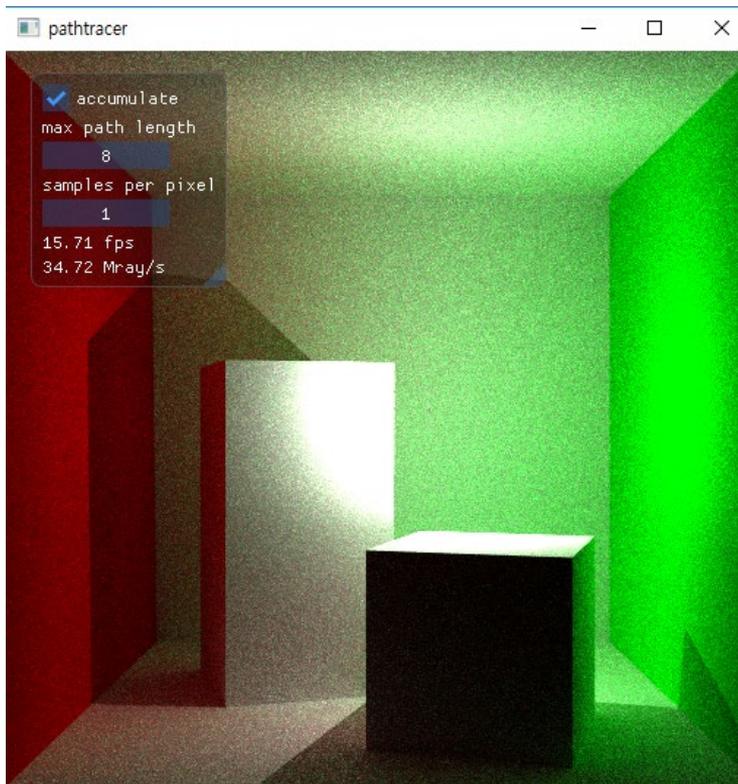
- **Play with some examples**
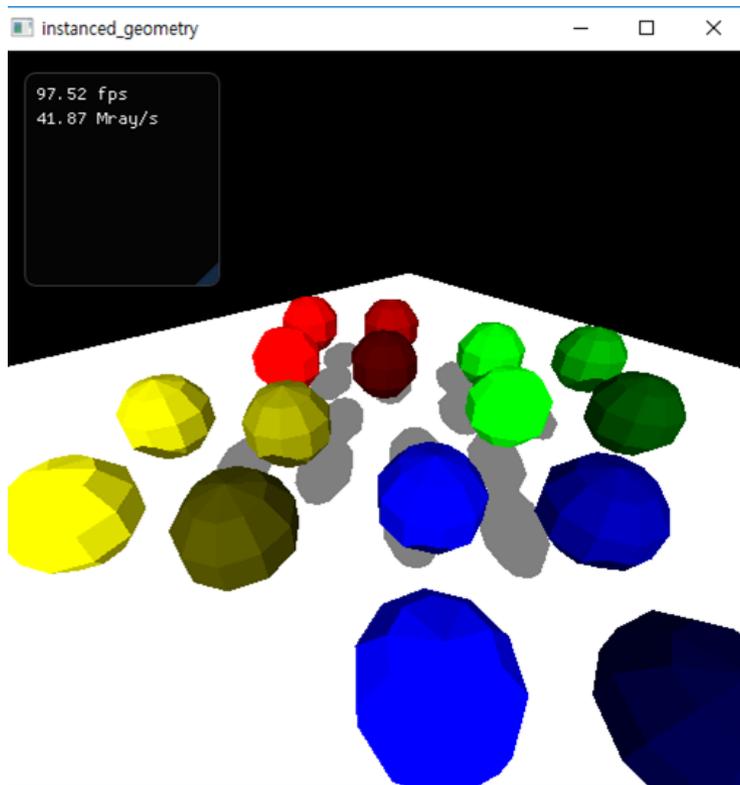
Instance_geometry

Instance_geometry_ispc

Playing with Embree

- **Play with some examples**

path_tracer; how the scene changes when time passes?

Playing with Embree

- **Play with some examples**

hair_geometry; how the scene changes when time passes?

Playing with Embree

- **See how it changes when time passes**

- **Interact with the scene**
  - **Drag mouse …**

- **Submit screenshots of following projects:**
  - **pathtracer**
  - **quaternion_motion_blur**
  - **voronoi**

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