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# PA1 – Playing with Embree

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# Embree Usage

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- **High performance ray tracing kernel**
  - Intel's ray tracing kernel optimized for Intel processors
- **Various kind of simulations**
  - Lighting, sound, particles, collision detection, etc.)

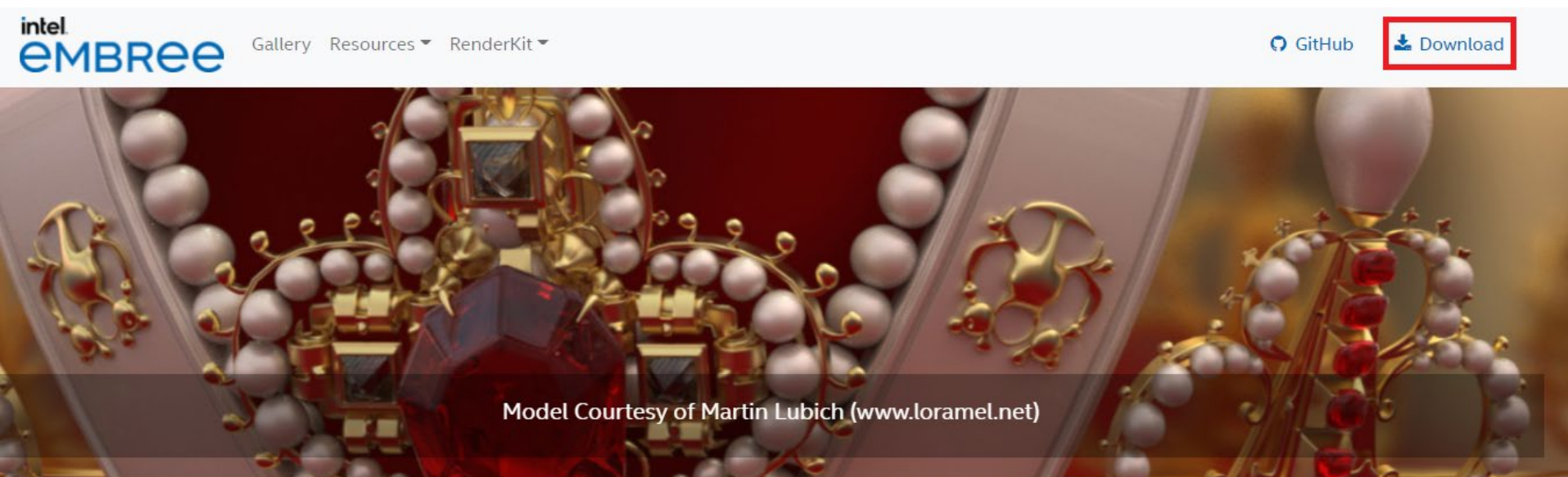


**Embree: A Kernel Framework for Efficient CPU Ray Tracing  
(SIGGRAPH 2014)**

# Installation

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



# 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 unnecessary 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

 <a href="#">embree-4.3.3-testing.tar.gz</a>	51.7 MB	Jul 22
 <a href="#">embree-4.3.3.arm64.macosx.zip</a>	55.9 MB	Jul 22
 <a href="#">embree-4.3.3.sycl.x64.windows.zip</a>	124 MB	Jul 22
 <a href="#">embree-4.3.3.sycl.x86_64.linux.tar.gz</a>	122 MB	Jul 22
 <a href="#">embree-4.3.3.x64.windows.zip</a>	72.9 MB	Jul 22
 <a href="#">embree-4.3.3.x86_64.linux.tar.gz</a>	71.4 MB	Jul 22
 <a href="#">embree-4.3.3.x86_64.macosx.zip</a>	70.8 MB	Jul 22
 <a href="#">Source code (zip)</a>		Jul 22
 <a href="#">Source code (tar.gz)</a>		Jul 22

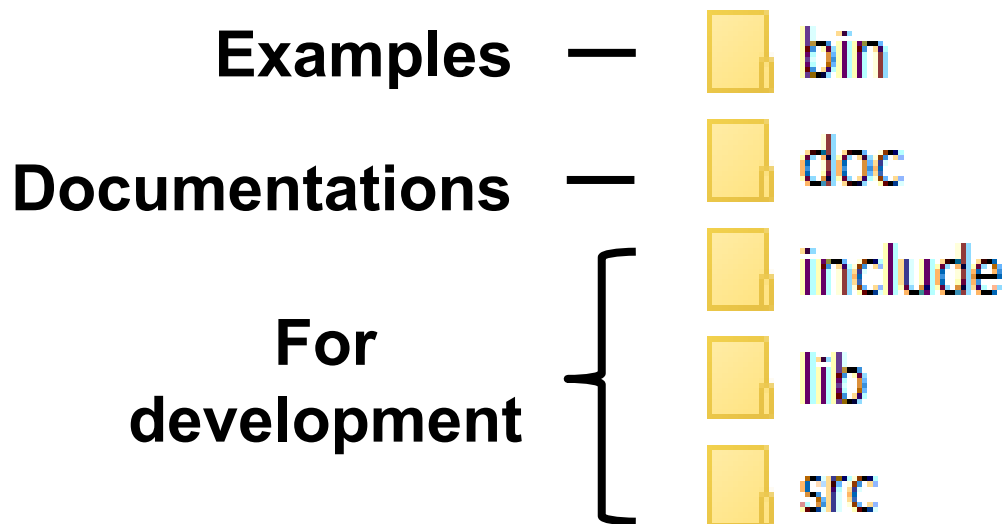
  3 3 people reacted

Binary  
for  
Win/  
Linux/  
Mac  
Source

# Example : Windows – 64-bit

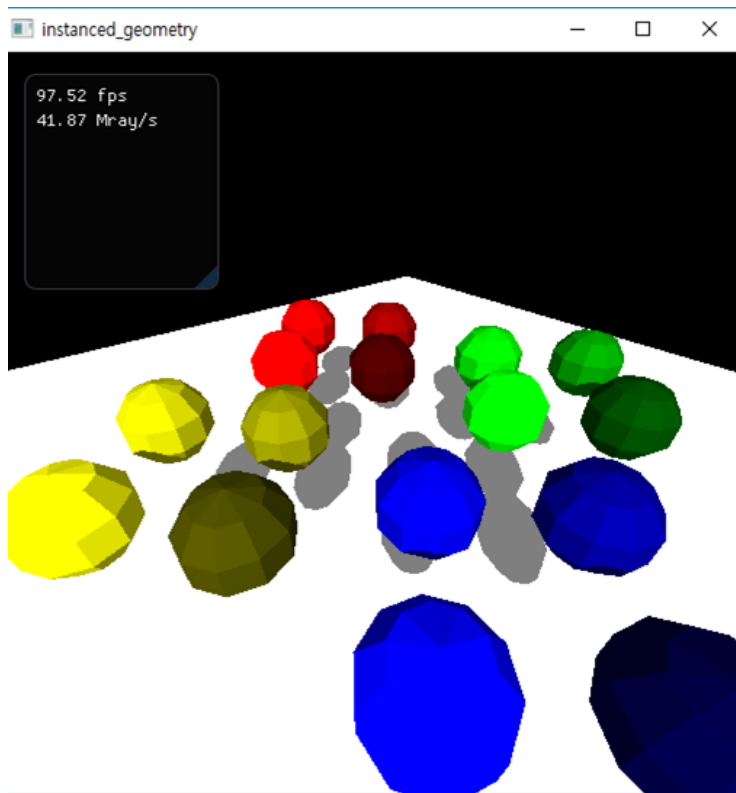
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- Contents of **embree-4.3.3.x64.windows.zip**

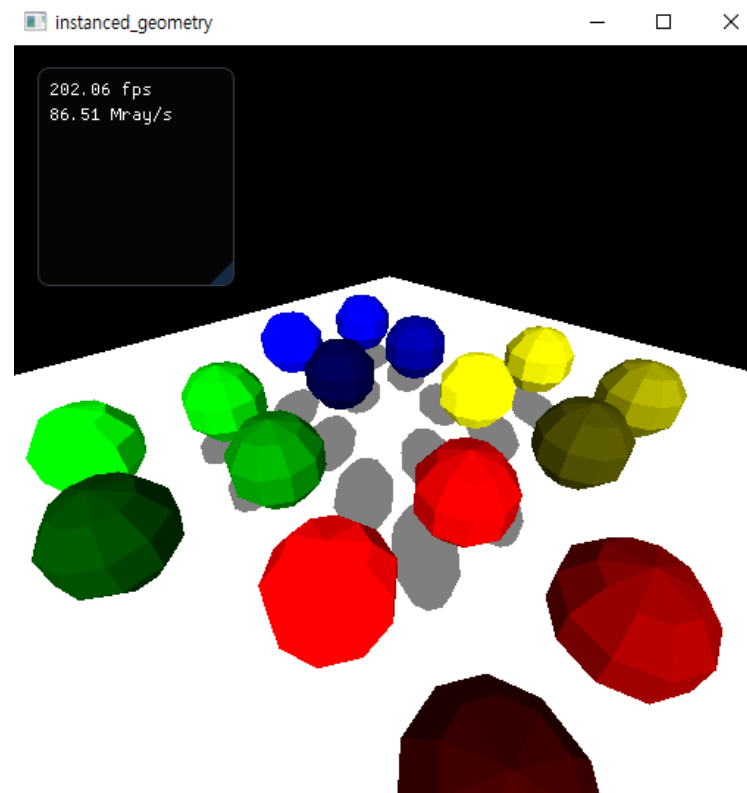


# Playing with Embree

- Play with some examples



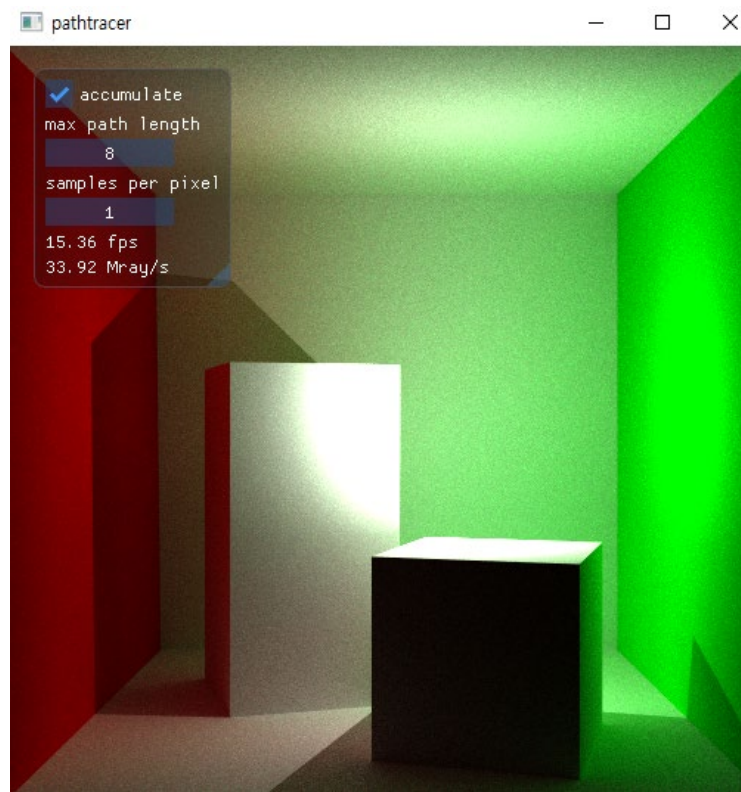
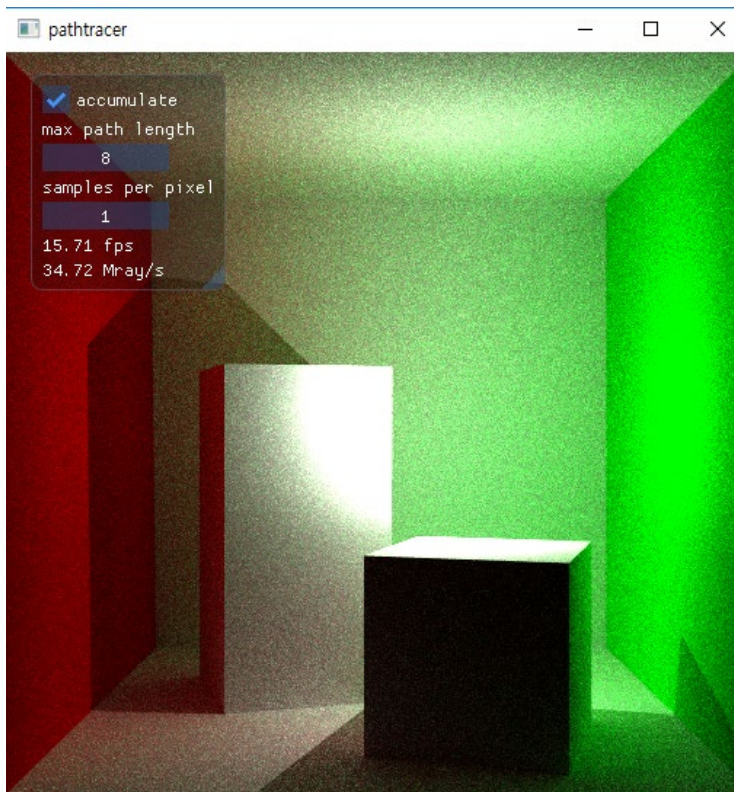
Instance\_geometry



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

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- **See how it changes when time passes**
- **Interact with the scene**
  - **Drag mouse ...**
- **Submit screenshots of following projects:**
  - **pathtracer**
  - **quaternion\_motion\_blur**
  - **voronoi**