

VU Design and Implementation of a Rendering Engine

Content: Rendering engine *internals*

Challenges

- Architectural: how to structure reusable **software modules**
- Technical: how to use hardware **efficiently**
- Dealing with tradeoffs: **usability** vs **performance**

Topics

- Graphics APIs **Insights** (OpenGL, Direct3D, Vulkan,..)
- Scene representation, **domain specific languages**
- performance **optimization** and **data structures**
- Systematic performance evaluation



Scene description



Optimization



GPU code

More information

see also:

<https://www.cg.tuwien.ac.at/courses/RendEng/>

Organization

- 3 ECTS ~ half lecture, half exercise (see TISS):
 - rendering engine component, optimization technique,...
- Monday, 16:15 (s.t.)-17:45, Seminarraum 186
- First lecture: **06.03.2023**



Background

- Lecturers bring together academic and industry experience
- The lecture combines:
 - State of the art rendering engine architecture and implementation
 - Years of rendering engine development experience (in research and industry)