Fortgeschritten Spieleentwicklung (Shader Programming)

Goal of the lecture

- For you to understand concepts
  - Programable hardware pipeline
- Scene showcasing real-time effects
  - Demo
  - Game

Todo

- Work on examples given in lecture
- Create a project (interactive demo)
- <1 minute video (YouTube)
- Examples

Grading

- Project outcome
- Active participation in lecture

What do you know?

- Linear algebra
- CG basics and OpenGL (cg lecture)
  - Pipeline
  - Transforms
  - Rasterization
  - Texturing

Lecture Content

- Topics
  - Programmable hardware Pipeline
  - Advanced Lighting
  - Texturing (Sampling Theory)
  - Levels of Detail
  - Global Illumination
  - Real-Time Shadows
  - Coherence Methods

Programing framework

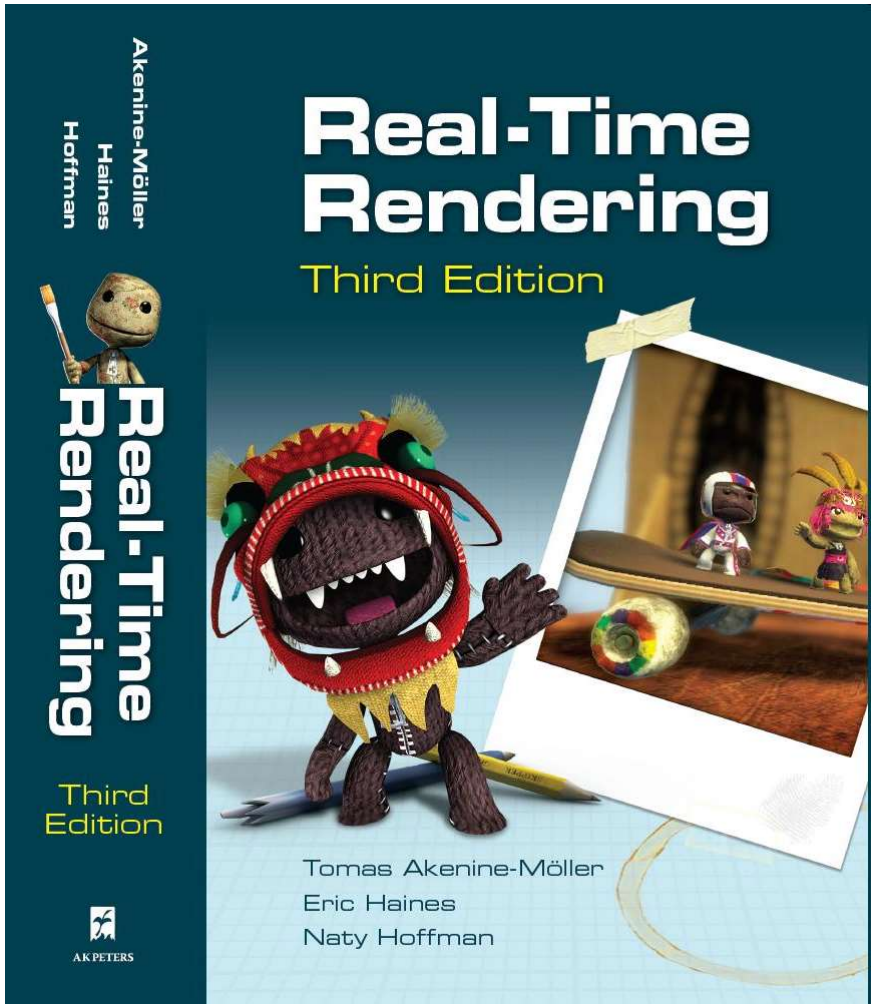
- github.com/danielscherzer/Framework
- C#
  - Mix of Java and C++
- MS Visual Studio
  - Linux/MacOS guys can use mono, but have to convert final version (a.k.a. upload version)
- Graphics: OpenGL graphics API (many details later)
  - OpenTK
    - C# wrapper for OpenGL

Moodle

- Deliverable/project upload
- Forums for questions
- Link to github
  - Slides
  - Examples
  - Framework

Books

- Real-Time Rendering, Third Edition
  - Tomas Akenine Möller, Eric Haines
  - AK Peters, 2008 (3rd edition)
  - Covers all standard methods
  - www.realtimerendering.com
  - Real-Time Rendering Resources
    - Huge collection of on/off-line resources
    - Online books (#books)
    - Software
    - API information



Books on OpenGL

- Basic knowledge about OpenGL
  - "Red Book"
  - Free: Google: "redbook pdf"
  - Also describes **GLSL shader programming language**
  - Latest: 8th Edition
  - Tutorials
    - nehe.gamedev.net