# Image Based Lighting in Real-Time - Project Proposal

João Pedro Jorge Willem Frishert

18-02-2007

## 1 Proposal

We propose to implement a Real-Time approach of Image Based Lighting (like done by ATI for *Rendering with Natural Light*) like described in [3]. For our base implementation the following features will be present:

- Computations using HDR images
- Tone Mapping using a Global Operator (not chosen yet)
- Synthetic objects materials: basic diffuse and specular objects
- Background built using Cube Mapping
- User interactivity

Due to time constraints on this project the next features will be considered optional:

- More complex BRDF's: Fresnel Reflection (Glass), Anisotropic Reflection (Metallic surfaces)
- Shadows
- Depth-Of-Field effect
- Lens Flare / Glare
- Motion Blur
- Camera / Object animation
- Multiscale Retinex Local Tone Mapping Algorithm

The scenario will comprise several simple synthetic objects being lit by information retrieved from lightprobes [3]. The implementation will be done in openGL 2.0 and GLSL Shading Language. The starting references will be [2, 4, 1, 5, 3].

# References


[1] Persson, E., 2005, HDR Texturing. In *ATI SDK* .

[2] Persson, E., 2005, Framebuffer Objects. In *ATI SDK* .

[3] Reinhard, E., Ward, G., Pattanaik, S. and Debevec, P., 2006, High Dynamic Range Imaging, Acquisitio, Display and Image Based Lighting. The Morgan Kaufmann Series in Computer Graphics.

[4] Cohen, J., Tchou, C., Hawkins, T. and Debevec, P., 2001,Real-Time High Dynamic Range Texture Mapping. In *Proceedings of the 12th Eurographics Workshop on Rendering Techniques*, Springer-Verlag pp. 313-320.

[5] Unger, J., Wrenninge, M. and Ollila, M., 2003, Real-Time Image Based Lighting in Software using HDR Panoramas. In *Proceedings of the 1st international conference on Computer graphics and interactive techniques in Australasia and South East Asia*, ACM Press pp. 263-ff.