

EZG18 - Haunted Castle

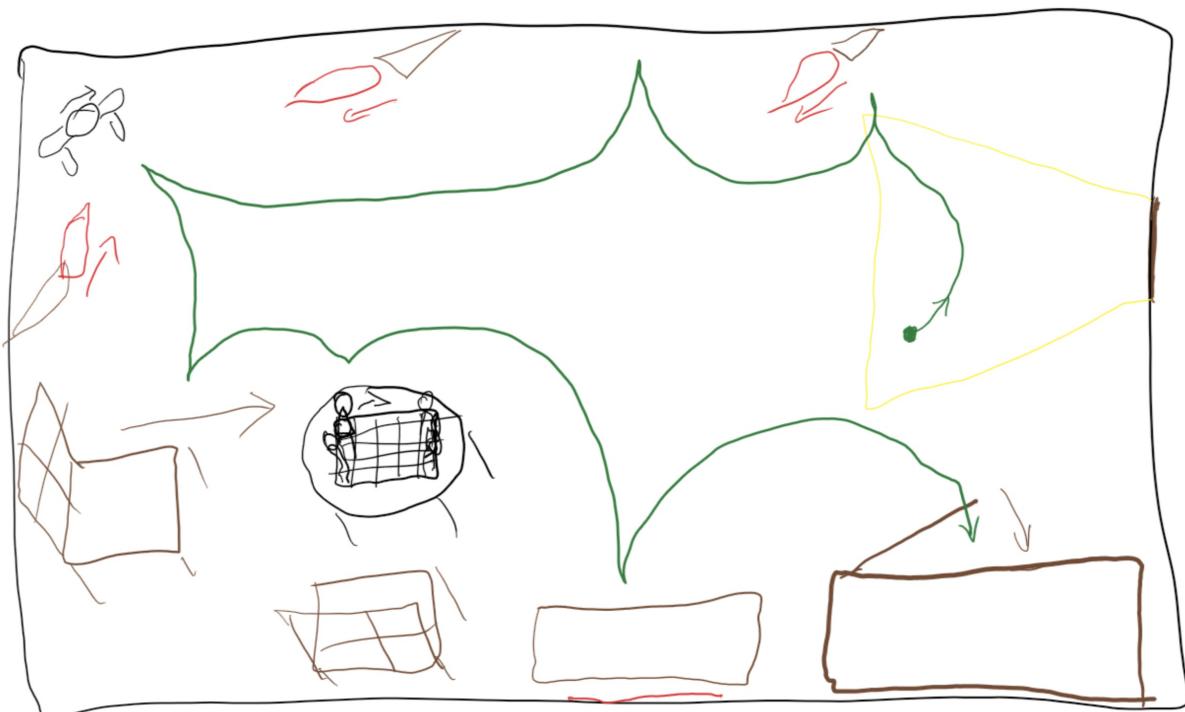
<> Brief description of the implementation, in particular a short description of how the different aspects of the requirements (see above) were implemented - be specific, but keep it concise.

Story

The user finds herself/hisself in a medieval dark room and can barely identify the objects around him/her. Suddenly torches catch fire as if by ghost hand. He/She takes a look around the room and see different things moving: A chair that is moving forward, chess figure starting moving, torches move to an upright position and paintings falling down. All ends with the cupboard falling on the user.

Scene

Medieval room with torches on fire, knight armors, chairs with chess desk, stone walls, paintings and closet.



CONTROLS

ALWAYS AVAILABLE

Key(s)	control
F1	Help / Show Controls
F2	Frame Time on/off
+/-	Ambient Light up/down
Page up/Page down/Pos1	Speed up/down/reset
C	Debug Mode on/off
ESC	Quit Game

JUST IN DEBUG MODE

Key(s)	control
F3	Wire Frame on/off
F4	Textur-Sampling-Quality: Nearest Neighbor/Bilinear
F5	Mip Mapping-Quality: Off/Nearest Neighbor/Linear
F6	Viewfrustum-Culling on/off
F7	Normal Mapping on/off
F8	Fire and Shadows 1 on/off
F9	Fire and Shadows 2 on/off
F10	Bloom on/off
F11	Light Shafts on/off
W, ARROW UP	Accelerate
S, ARROW DOWN	Decelerate/Backwards
A, ARROW LEFT, MOUSE DRAG RIGHT	Pan left

D, ARROW RIGHT, MOUSE DRAG LEFT	Pan right
Q	Go down
E	Go up
MOUSE DRAG UP	Camera down
MOUSE DRAG DOWN	Camera up

DEVELOPMENT STATUS

Implemented:

- Bling-Phong illumination model
- Loading all **models** with textures
- Debug camera (**Controls** see above)
- Camera Path (**Cubic Hermite**)
- All **Effect** (See below)

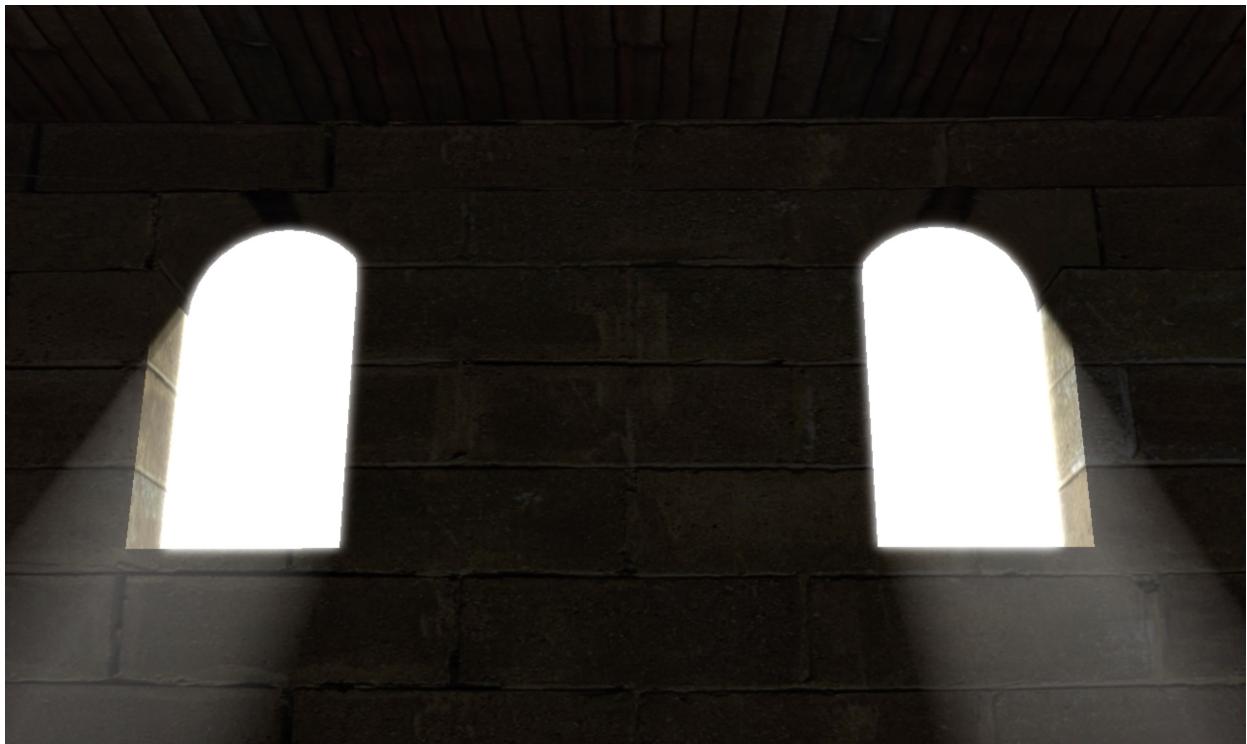
EFFECTS

<> TODO How you've implemented those Effects (Links/References to papers, books or other resources where the effect is described and a description of your extensions to it)

- Direction shadows with PCF (from the sun)
 - (Liu, N., & Pang, M. Y. (2009, January). Shadow mapping algorithms: a complete survey. In Computer Network and Multimedia Technology, 2009. CNMT 2009. International Symposium on (pp. 1-5). IEEE.
<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5374715> Reeves, W. T., Salesin, D. H., & Cook, R. L. (1987, August). Rendering antialiased shadows with depth maps. In ACM Siggraph Computer Graphics (Vol. 21, No. 4, pp. 283-291).
<https://dl.acm.org/citation.cfm?id=37435>



- Bloom (Bright Window)
 - <http://learnopengl.com/#!Advanced-Lighting/Bloom>



- Fire (Particle Effect)
 - Revision Course Slides: Particle Systems (2018W)
 - Revision Course Slides: Particle Systems (2018W)



- Omnidirectional Shadows (Shadows of Torches)
 - Revision Course Slides: Omnidirectional Shadows (2018W)

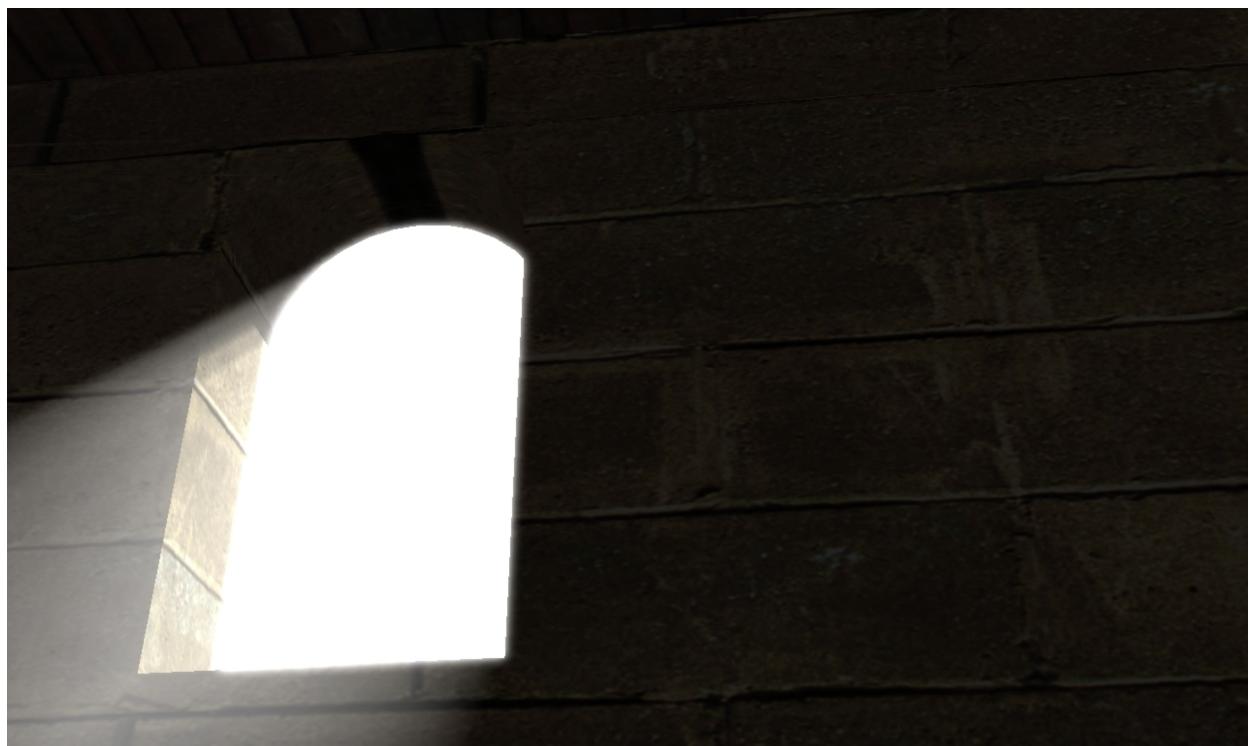


- Bump Mapping (Wall)
 - Kilgard, M. J. (2000, July). A practical and robust bump-mapping technique for today's GPUs. In Game Developers Conference 2000 (pp. 1-39).
<https://www.cg.tuwien.ac.at/courses/Realtime/slides/VU.WS.2013/PracticalBumpMa>

p.pdf



- Volumetric Lighting (Light Rays from Sun)
 - Revision Course Slides: Volumetric Lighting (2018W)



IMPLEMENTATION DETAILS

Requirements

- Windows
- OpenGL 3.3 Core Profile
- NVIDIA GTX 1060 (Tested on AMAROK PC in VisLab)

Tools

- Visual Studios 2013
- Blender: <https://www.blender.org/>
- HitFilm Express: <https://fxhome.com/express>

Libraries used

- Assimp: <http://www assimp.org/>
- FreeImage: <http://freeimage.sourceforge.net/>
- Glew: <http://glew.sourceforge.net/install.html>
- PhysX: <https://developer.nvidia.com/physx-sdk>
- fmod: <https://www.fmod.com/>

Models

- Chessboard with figures: <https://free3d.com/3d-model/chess-table-18114.html>
- Chest of drawers: <https://www.turbosquid.com/3d-models/free-sideboard-3d-model/558818>
- Frame: <https://free3d.com/3d-model/frame-75994.html>
- Knight1 and Knight2: <https://free3d.com/3d-model/knight-84265.html>
- Door: <https://free3d.com/3d-model/medieval-door-16986.html>
- Torches: <https://www.yobi3d.com/q/3d-models-fire-torch>
- Wardrobe: <https://www.turbosquid.com/3d-models/classic-wardrobe-unwrap-model-1288182>
- Chairs: <https://www.turbosquid.com/3d-models/free-wooden-chair-3d-model/791045>
- Table: <https://free3d.com/3d-model/round-table-928375.html>

Additional Textures

- Walls of Room: Stone(1)01 from
https://www.cg.tuwien.ac.at/courses/Textures/Total_Textures_V1/
- Ceiling of Room: Wood(2)09 from
https://www.cg.tuwien.ac.at/courses/Textures/Total_Textures_V1/
- Floor of Room: Wood(2)10 from

https://www.cg.tuwien.ac.at/courses/Textures/Total_Textures_V1/

- Frame Image: <https://dermeister.at/evilmaster01.jpg>

Music

- Spooky Music Instrumental - Ravensbrook: <https://www.youtube.com/watch?v=H9D8fAC6CoU>
- Sound Effects: <https://freesound.org>

VIDEO

Coming soon

Authors

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