



# Curriculum Vitae ir. Matthias Moulin

## Personalia

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Nationality: Belgian Birthdate: 15 January 1992  
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 LinkedIn <https://be.linkedin.com/in/matthias-moulin>  
 Github <https://github.com/matt77hias> - <https://matt77hias.github.io>

## Experience *(in reverse chronological order)*

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Jun 2020 - [Frostbite](#), [EA Digital Illusions CE AB](#) (DICE), Stockholm (Sweden)  
Software Engineer in Rendering II – Image Quality (Frostbite Rendering)  
Feb 2019 - Jun 2020 [Frostbite](#), [EA Digital Illusions CE AB](#) (DICE), Stockholm (Sweden)  
Software Engineer in Rendering I – Image Quality (Frostbite Rendering)  
• **Technologies:** Enlighten, Flux, GI Live Preview, GPU Probes, PBR Materials  
Oct 2016 - Feb 2019 [Department of Computer Science](#), [KU Leuven](#), Leuven (Belgium)  
PhD Researcher funded by the [Research Foundation - Flanders](#) (FWO)  
Oct 2015 - Sep 2016 [Department of Computer Science](#), [KU Leuven](#), Leuven (Belgium)  
PhD Researcher funded by the [Computer Graphics Research Group](#) ([KU Leuven](#))

## Education *(in reverse chronological order)*

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2015 - 2020 [KU Leuven](#), Leuven (Belgium)  
Doctor of Philosophy in Engineering (Computer Science) — **Not finished**  
• **Research topics:** Acceleration data structures and heuristics for ray tracing queries  
(Global illumination) light transport and (real-time) rendering algorithms  
**Supervisor:** prof. dr. ir. Philip Dutré  
• **Funding:** [Research Foundation - Flanders](#) (FWO) Oct 2016 - Sep 2020  
[Computer Graphics Research Group](#) ([KU Leuven](#)) Oct 2015 - Sep 2016  
2015 - 2016 [Gemeentelijke Academie Wemmel](#), Wemmel (Belgium)  
Part-Time Arts Education - Music  
• **Major:** Electrical Guitar (Pop/Jazz)  
2013 - 2015 [KU Leuven](#), Leuven (Belgium)  
Master of Science in Engineering (Computer Science) — **Magna cum laude** (84.46%)  
• **Major:** Human Computer Interaction (Computer Graphics)  
• **Thesis:** Hybrid Kd-trees for Photon Mapping and Accelerating Ray Tracing (18.5/20)  
**Supervisor:** prof. dr. ir. Philip Dutré  
2010 - 2013 [KU Leuven](#), Leuven (Belgium)  
Bachelor of Science in Engineering — **Magna cum laude** (76.83%)  
• **Major:** Computer Science  
• **Minors:** Electrical Engineering and Business Management  
2004 - 2010 [Sint-Theresiacollege](#), Kapelle-op-den-Bos (Belgium)  
Algemeen Secundair Onderwijs (ASO) — **Magna cum laude** (84.1%)  
• **Major:** Science - Mathematics  
2000 - 2010 [Gemeentelijke Academie Grimbergen](#), Grimbergen (Belgium)  
Part-Time Arts Education - Music — **Magna cum laude** (81.6%)  
• **Major:** Alto Saxophone (Classical Music)

## Publications *(in reverse chronological order)*

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**MOULIN M.**, DUTRÉ P.: [On the use of Local Ray Termination for Efficiently Constructing Qualitative BSPs, BIHs and \(S\)BVHs](#), *The Visual Computer*, Volume 35, Issue 12, pp. 1809–1826, December 2019 (First online: July 2018).  
**MOULIN M.:** [Hybrid Kd-trees for Photon Mapping and Accelerating Ray Tracing](#), *Master's thesis*, Department of Computer Science, KU Leuven, Belgium, June 2015.

**MOULIN M.**, **BILLEN N.**, **DUTRÉ P.**: [Efficient Visibility Heuristics for Kd-Trees Using the RTSAH](#), In *Eurographics Symposium on Rendering - Experimental Ideas & Implementations* (June 2015), Lehtinen J., Nowrouzezahrai D., (Eds.), The Eurographics Association, pp. 31–39.

## Game credits and contributions *(in reverse chronological order)*

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EA DICE, Criterion Games, EA Gothenburg, [Ripple Effect Studios](#): [Battlefield 2042](#), [Electronic Arts](#), November 2022.

EA Vancouver: [NHL 22](#), [Electronic Arts](#), October 2021.

EA Vancouver, EA Romania: [FIFA 22](#), [Electronic Arts](#), October 2021.

EA Tiburon: [Madden NFL 22](#), [Electronic Arts](#), August 2021.

EA Vancouver, EA Romania: [FIFA 21](#), [Electronic Arts](#), October 2020.

Motive: [Star Wars: Squadrons](#), [Electronic Arts](#), October 2020.

EA Tiburon: [Madden NFL 21](#), [Electronic Arts](#), August 2020.

Ghost Games, Criterion Games: [Need for Speed Heat](#), [Electronic Arts](#), November 2019.

PopCap Games: [Plants vs. Zombies: Battle for Neighborville](#), [Electronic Arts](#), October 2019.

EA Vancouver, EA Romania: [FIFA 20](#), [Electronic Arts](#), September 2019.

EA Tiburon: [Madden NFL 20](#), [Electronic Arts](#), August 2019.

EA DICE: [Battlefield V](#), [Electronic Arts](#), November 2018. *(post-release)*

EA DICE: [Star Wars Battlefront II](#), [Electronic Arts](#), November 2017. *(post-release)*

## Skills

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Frameworks	D3D11, D3D12, OpenCV, OpenMP
Game engines	Frostbite, Unity3D
Markup languages	HTML/CSS, Markdeep, Markdown, TeX/LaTeX
Modelling languages	OCL, UML
Programming languages	C (89/90, 99, 11/18), C++ (98/03, 11/14, 17, 20), C#, CUDA C/C++, Elm, Erlang, Haskell, J#, Java, JavaScript/TypeScript, Maple, Matlab/Octave, MIPS, Prolog, Python 2/3, Racket
Shading languages	GLSL, HLSL
Version control	Git, Mercurial, Perforce, SVN



## Languages

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Dutch	Mother tongue
English	Fluent speaker and writer
French	Moderate speaker and writer
Swedish	Basic speaker and writer

## Past projects *(selected)*

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 <a href="#">MAGE v0</a>	Rendering engine ( <i>C++17, D3D11, HLSL</i> )
 <a href="#">MAGE v1 (WIP)</a>	Improved and extended remake built from the ground up ( <i>C++20, D3D12, HLSL</i> )

## Teaching assistantship

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2016 - 2018	Computer Graphics: Project	<a href="#">[B-KUL-H07Z5A]</a>
2016 - 2017	Capita Selecta Computer Science: Man Machine Interface	<a href="#">[B-KUL-H05N2A]</a>
2016 - 2017	Problem Solving and Engineering Design, Part 3	<a href="#">[B-KUL-H01D4B]</a>
2015 - 2016	Problem Solving and Engineering Design: Computer Science	<a href="#">[B-KUL-H01Q3C]</a>

## Thesis mentorship

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2018 - 2019	Jesse Hoobergs	Using the Distribution of the Geometric Normals for Constructing BSPs
2017 - 2018	Mathijs Delabie	Genetic Operators for Metropolis Light Transport
2016 - 2017	Menno Keustermans	Estimating Ray Distributions from a Markov Transfer Process
2016 - 2017	Maarten Tegelaers	Forward & Deferred Hashed Shading for Real-time Rendering of Many Lights
2015 - 2016	Jeroen Sanders	Accelerating Ray Tracing using Cone/Cylinder Shafts