

Curriculum Vitae Matthias Moulin

Personalia

City:	Humbeek (Belgium)	Nationality:	Belgian
Birthdate:	15 January 1992	Birthplace:	Vilvoorde (Belgium)
Mobile:	██████████	Email:	matthias[dot]moulin[at]gmail[dot]com
Driving license:	Class B	Hobbies:	Running, saxophone, guitar, game and rendering engine design, programming, gaming

 LinkedIn <https://be.linkedin.com/in/matthias-moulin>
 Github <https://github.com/matt77hias> - <https://matt77hias.github.io>

Education *(in reverse chronological order)*

2015 - [KU Leuven](#), Leuven (Belgium)
Doctor of Philosophy in Engineering (Computer Science)
• **Research topics:** Acceleration data structures and heuristics for ray tracing queries
Real-time rendering
(Global illumination) light transport and 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)

Experience *(in reverse chronological order)*

Feb 2019 - [Frostbite](#), [EA Digital Illusions CE AB](#), Stockholm (Sweden)
Software Engineer in Rendering
• **Technology:** 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 \(KU Leuven\)](#)

Publications *(in reverse chronological order)*

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)*

[Ghost 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

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

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

Past projects

MAGE	Game and rendering engine featuring both forward and deferred PBR pipelines with optional Voxel Cone Tracing indirect illumination (<i>C++17/C++20, D3D11/D3D12, HLSL</i>)
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Teaching assistantship

2016 - 2018	Computer Graphics: Project	[B-KUL-H07Z5A]
2016 - 2017	Capita Selecta Computer Science: Man Machine Interface	[B-KUL-H05N2A]
2016 - 2017	Problem Solving and Engineering Design, Part 3	[B-KUL-H01D4B]
2015 - 2016	Problem Solving and Engineering Design: Computer Science	[B-KUL-H01Q3C]

Thesis mentorship

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