Curriculum Vitae Matthias **Moulin**

Personalia

City:	Humbeek (Belgium)	Nationality:	Belgian
Birthdate:	15 January 1992	Birthplace:	Vilvoorde (Belgium)
Mobile:	[redacted]	Email:	matthias[dot]moulin[at]gmail[dot]com
Driving license:	Car (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

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
  Adaptive sampling and reconstruction techniques

  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

Oct 2016 - 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, *To appear in The Visual Computer*, 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.

Skills

Programming languages	C++ (98/03, 11/14, 17), C#, C (89/90, 99, 11), Python 2/3, CUDA C/C++, Java, J#, Erlang, Prolog, Racket, Haskell, Elm, JavaScript/TypeScript, Matlab/Octave, Maple, MIPS
Shading languages	HLSL
Modelling languages	UML, OCL
Markup languages	TeX/LaTeX, Markdown, Markdeep, HTML/CSS
Frameworks	D3D11, OpenMP, OpenCV
Tools	Git, SVN, Mercurial, Microsoft Windows family, Microsoft Office family, Visual Studio IDE, Eclipse IDE, RenderDoc, NVIDIA Nsight, Unity3D

Languages

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

Past projects

2048	Fault-resistant, concurrent version of the popular game 2048 *(Erlang)*
Fingerprint compression	Fingerprint Compression using wavelet packets *(Python, Matlab)*
FrigoShare	Android app with Google App Engine backend for sharing food leftovers *(Java, GAE)*
Hybrid Survivor	Hybrid game using Unity3D and the Oculus Rift DK1 *(JavaScript and C#)*
Incisor segmentation	Model-based procedure capable of segmenting the incisors in panoramic dental radiographs using an Active Shape Model *(Python and OpenCV)*
JUnit Test Deamon	Automatic test deamon extension of the JUnit Framework *(Java)*
LRE	Ray tracing engine for rendering .obj scenes with several effects (reflection, refraction, etc.) by using a variety of acceleration data structures *(Java)*
MAGE	Game and rendering engine featuring both forward and deferred PBR pipelines with optional Voxel Cone Tracing indirect illumination (*C++17, D3D11, HLSL*)
MazeStormer	A physical and emulated autonomous robot powered by LEGO NXT *(Java, leJOS, RabbitMQ)*

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 students

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 and Deferred Hashed Shading for Real-time Rendering of Many Lights
2015 - 2016	Jeroen Sanders	Accelerating Ray Tracing using Cone/Cylinder Shafts