

# Curriculum Vitae Matthias Moulin

## Personalia

---

Name:	Moulin	First name:	Matthias
Address:	[REDACTED]	Postcode:	BE - 1851
City:	Humbeek (Belgium)	Nationality:	Belgian
Birthdate:	15 January 1992	Birthplace:	Vilvoorde (Belgium)
Mobile:	[REDACTED]	Email:	[REDACTED]
Driving license:	Car (B)	Hobbies:	Running, saxophone, guitar, gaming, game design, programming
LinkedIn	<a href="http://be.linkedin.com/pub/matthias-moulin/8b/a49/a23">http://be.linkedin.com/pub/matthias-moulin/8b/a49/a23</a>		

## Education

---

2015 -	Gemeentelijke Academie Wemmel, Wemmel (Belgium) Deeltijds Kunstonderwijs - Studierichting: Muziek • <b>Major:</b> Electrical Guitar (Pop/Jazz)
2015 -	KU Leuven, Leuven (Belgium) Doctor of Philosophy in Engineering (Computer Science) • <b>Subject:</b> Increasing the convergence speed of physically-based rendering algorithms in computer graphics using frequency-based combined adaptive sampling and adaptive filtering <b>Promotor:</b> prof. dr. ir. Philip Dutré <b>Assessors:</b> prof. dr. ir. Daan Huybrechts & prof. dr. ir. Giovanni Samaey • <b>Research topics:</b> Acceleration data structures and heuristics for ray tracing Global illumination algorithms Adaptive sampling and reconstruction techniques • <b>Funding:</b> Fonds Wetenschappelijk Onderzoek (FWO) Oct 2016 - Sep 2020 Computer Graphics Research Group (KU Leuven) Oct 2015 - Sep 2016
2013 - 2015	KU Leuven, Leuven (Belgium) Master of Science in Engineering (Computer Science) - <b>Magna cum laude</b> (84.46%) • <b>Major:</b> Human Computer Interaction (Computer Graphics) • <b>Thesis:</b> Hybrid kd-trees for photon mapping and accelerating ray tracing (18.5/20) <b>Paper:</b> Efficient visibility heuristics for kd-trees using the RTSAH (published) <b>Promotor:</b> prof. dr. ir. Philip Dutré
2010 - 2013	KU Leuven, Leuven (Belgium) Bachelor of Science in Engineering - <b>Magna cum laude</b> (76.83%) • <b>Major:</b> Computer Science • <b>Minor:</b> Business Management Electrical Engineering
2004 - 2010	Sint-Theresiacollege, Kapelle-op-den-Bos (Belgium) Algemeen Secundair Onderwijs (ASO) - (84.1%) • <b>Major:</b> Science-Mathematics
2000 - 2010	Gemeentelijke Academie Grimbergen, Grimbergen (Belgium) Deeltijds Kunstonderwijs - Studierichting: Muziek - <b>Magna cum laude</b> (81.6%) • <b>Major:</b> Alto Saxophone (Classical Music)

## Experience

---

Oct 2016 -	KU Leuven, Leuven (Belgium) PhD Researcher funded by Fonds Wetenschappelijk Onderzoek
Oct 2015 - Sep 2016	KU Leuven, Leuven (Belgium) PhD Researcher funded by Computer Graphics Research Group
Aug 2010	Caterpillar Logistics Inc., Grimbergen (Belgium) Worker at shipping (student job)

## Languages

---

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

## Skills

---

Programming languages	C++, C#, C, Python, CUDA, Java, Erlang, Prolog, Scheme, Racket, Haskell, Elm, Matlab, Maple
Modelling languages	UML, OCL
Tools	Unity3D, LaTeX, Git, SVN, Windows family, Office family, Visual Studio, Eclipse IDE, Enthought Canopy IDE

## Publications

---

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 <i>In Proceedings of Eurographics Symposium on Rendering - Experimental Ideas &amp; Implementations</i> (June 2015), 31-39.

## Teaching

---

2016 - 2017	KU Leuven, Leuven (Belgium) Problem Solving and Engineering Design, Part 3 (B-KUL-H01D4B) <ul style="list-style-type: none"><li>• <b>Program:</b> Bachelor of Science in Engineering</li><li>• <b>Staff:</b> prof. dr. ir. Philip Dutré</li><li>• <b>Teaching assistants:</b> ir. Matthias Moulin</li></ul>
2015 - 2016	KU Leuven, Leuven (Belgium) Problem Solving and Engineering Design: Computer Science (B-KUL-H01Q3C) <ul style="list-style-type: none"><li>• <b>Program:</b> Bachelor of Science in Engineering &amp; Bachelor of Science in Informatics</li><li>• <b>Staff:</b> prof. dr. ir. Hendrik Blockeel, prof. dr. ir. Erik Duval, prof. dr. ir. Dirk Nuyens</li><li>• <b>Teaching assistants:</b> Juan Alvarado, dr. Sam Corveleyn, Micol Ferranti, Roel Matthysen, ir. Matthias Moulin, Fan Yang</li></ul>

## Thesis students

---

2016 - 2017	KU Leuven, Leuven (Belgium) Menno Keustermans - Distributed Geometry for Out-of-core Coherent Distributed Ray Tracing • <b>Program:</b> Master of Science in Engineering (Computer Science) • <b>Promotor:</b> prof. dr. ir. Philip Dutré • <b>Mentors:</b> ir. Matthias Moulin, Roald Frederickx
2016 - 2017	KU Leuven, Leuven (Belgium) Tim Lenaers - Using the Normal Distribution Function for Constructing BSP Acceleration Data Structures • <b>Program:</b> Master of Applied Informatics • <b>Promotor:</b> prof. dr. ir. Philip Dutré • <b>Mentor:</b> ir. Matthias Moulin
2015 - 2017	KU Leuven, Leuven (Belgium) Sus Verwimp - Approximated Geometry for Efficient Visibility Calculations • <b>Program:</b> Master of Applied Informatics • <b>Promotor:</b> prof. dr. ir. Philip Dutré • <b>Mentors:</b> ir. Niels Billen, ir. Matthias Moulin
2015 - 2016	KU Leuven, Leuven (Belgium) Jeroen Sanders - Accelerating Ray Tracing using Cone/Cylinder Shafts • <b>Program:</b> Master of Science in Engineering (Computer Science) • <b>Promotor:</b> prof. dr. ir. Philip Dutré • <b>Mentors:</b> ir. Niels Billen, ir. Matthias Moulin

## Past projects

---

2048	A fault-resistant, concurrent version of the popular game 2048 ( <i>written in Erlang</i> )
Fingerprint compression	Fingerprint Compression using wavelet packets ( <i>written in Python</i> )
FrigoShare	An Android app and Google App Engine backend for sharing food leftovers ( <i>written in Java</i> )
Hybrid Survivor	A hybrid game using Unity3D and the Oculus Rift ( <i>written in JavaScript, C#</i> )
Incisor segmentation	A model-based procedure capable of segmenting the incisors in panoramic dental radiographs using an Active Shape Model (ASM) ( <i>written in Python</i> )
JUnit Test Deamon	Automatic test daemon extension of the Junit Framework ( <i>written in Java</i> )
Lillyhammer Rendering Engine	A ray tracing engine written from scratch, capable of rendering .obj scenes with several kinds of effects (reflection, refraction, ...) by using a variety of acceleration data structures (BVH, kd-trees, regular grid, ...) ( <i>written in Java</i> )
MazeStormer	A robot powered by LEGO NXT ( <i>written in Java</i> )
Tron	Adaption of the Tron game ( <i>written in Elm</i> )