Curriculum Vitae Matthias **Moulin**

Personalia

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 (engine) design, programming

LinkedIn https://be.linkedin.com/in/matthias-moulin-a23a498b
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
  Global illumination algorithms
  Adaptive sampling and reconstruction techniques
  Promotor: prof. dr. ir. Philip Dutré
  Assessors: prof. dr. ir. Daan Huybrechs & prof. dr. ir. Giovanni Samaey
- **Funding**: Fonds Wetenschappelijk Onderzoek (FWO) Oct 2016 - Sep 2020
  Computer Graphics Research Group (KU Leuven) Oct 2015 - Sep 2016

2015 - 2016 Gemeentelijke Academie Wemmel, Wemmel (Belgium)
Deeltijds Kunstonderwijs - Studierichting: Muziek
- **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)
  Paper: Efficient visibility heuristics for kd-trees using the RTSAH (published)
  Promotor: prof. dr. ir. Philip Dutré

2010 - 2013 KU Leuven, Leuven (Belgium)
Bachelor of Science in Engineering - **Magna cum laude** (76.83%)
- **Major**: Computer Science
- **Minor**: Business Management
  Electrical Engineering

2004 - 2010 Sint-Theresiacollege, Kapelle-op-den-Bos (Belgium)
Algemeen Secundair Onderwijs (ASO) **-** (84.1%)
- **Major**: Science-Mathematics

2000 - 2010 Gemeentelijke Academie Grimbergen, Grimbergen (Belgium)
Deeltijds Kunstonderwijs - Studierichting: Muziek - **Magna cum laude** (81.6%)
- **Major**: 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 (KU Leuven)

Publications

[1] MOULIN M.: Hybrid Kd-trees for Photon Mapping and Accelerating Ray Tracing. *Master's thesis*, Department of Computer Science, KU Leuven, Belgium, 2015.

[2] 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++, C#, C, Python 2/3, CUDA, Java, J#, Erlang, Prolog, Racket, Scheme, Haskell, Elm, JavaScript, TypeScript, Matlab/Octave, Maple
Shading languages	HLSL
Modelling languages	UML, OCL
Markup languages	LaTeX, Markdown, HTML/CSS
Frameworks	OpenMP, D3D11
Tools	Git, SVN, Windows family, Office family, Visual Studio IDE, Eclipse IDE, Unity3D

Languages

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

Past projects

2048	A fault-resistant, concurrent version of the popular game 2048 *(written in Erlang)*
Fingerprint compression	Fingerprint Compression using wavelet packets *(written in Python)*
FrigoShare	An Android app and Google App Engine backend for sharing food leftovers *(written in Java)*
Hybrid Survivor	A hybrid game using Unity3D and the Oculus Rift DK1 *(written in JavaScript, C#)*
Incisor segmentation	A model-based procedure capable of segmenting the incisors in panoramic dental radiographs using an Active Shape Model (ASM) *(written in Python)*
JUnit Test Deamon	Automatic test deamon extension of the Junit Framework *(written in Java)*
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, …) *(written in Java)*
MazeStormer	A robot powered by LEGO NXT *(written in Java)*

Teaching

2016 - 2017 KU Leuven, Leuven (Belgium)
Computer Graphics: Project (B-KUL-H07Z5A)
- **Program**: Master of Science in Engineering (Computer Science)
- **Staff**: prof. dr. ir. Philip Dutré
- **Teaching assistants**: ir. Matthias Moulin, ir. Niels Billen, Roald Frederickx

2016 - 2017 KU Leuven, Leuven (Belgium)
Capita Selecta Computer Science: Man Machine Interface (B-KUL-H05N2A)
- **Program**: Master of Science in Engineering (Computer Science)
- **Staff**: prof. dr. ir. Philip Dutré
- **Teaching assistants**: ir. Matthias Moulin, ir. Niels Billen

2016 - 2017 KU Leuven, Leuven (Belgium)
Problem Solving and Engineering Design, Part 3 (B-KUL-H01D4B)
- **Program**: Bachelor of Science in Engineering
- **Staff**: prof. dr. ir. Philip Dutré, prof. dr. ir. Karl Meerbergen
- **Teaching assistants**: ir. Matthias Moulin, ir. Niels Billen, Roald Frederickx

2015 - 2016 KU Leuven, Leuven (Belgium)
Problem Solving and Engineering Design: Computer Science (B-KUL-H01Q3C)
- **Program**: Bachelor of Science in Engineering & Bachelor of Science in Informatics
- **Staff**: prof. dr. ir. Hendrik Blockeel, prof. dr. ir. Erik Duval †, prof. dr. ir. Dirk Nuyens
- **Teaching assistants:** Fan Yang, Juan Alvarado, ir. Matthias Moulin, Micol Ferranti, Roel Matthysen, dr. Samuel Corveleyn

Thesis students

2016 - 2017 KU Leuven, Leuven (Belgium)
Menno Keustermans - Distributed Geometry for Out-of-core Coherent Distributed Ray Tracing
- **Program**: Master of Science in Engineering (Computer Science)
- **Promotor**: prof. dr. ir. Philip Dutré
- **Mentors**: ir. Matthias Moulin, Roald Frederickx

2016 - 2017 KU Leuven, Leuven (Belgium)
Maarten Tegelaers - Clustered Shading in Forward and Deferred Renderers
- **Program**: Master of Science in Engineering (Computer Science)
- **Promotor**: prof. dr. ir. Philip Dutré
- **Mentors**: ir. Jeroen Baert, ir. Matthias Moulin

2015 - 2016 KU Leuven, Leuven (Belgium)
Jeroen Sanders - Accelerating Ray Tracing using Cone/Cylinder Shafts
- **Program**: Master of Science in Engineering (Computer Science)
- **Promotor**: prof. dr. ir. Philip Dutré
- **Mentors**: ir. Niels Billen, ir. Matthias Moulin