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	http://be.linkedin.com/pub/matthias-moulin/8b/a49/a23		

Education

2015 - Gemeentelijke Academie Wemmel, Wemmel (Belgium)
Deeltijds Kunstonderwijs - Studierichting: Muziek
- **Major**: Electrical Guitar (Pop/Jazz)

2015 - KU Leuven, Leuven (Belgium)
Doctor of Philosophy in Engineering (Computer Science)
- **Subject**: Increasing the convergence speed of physically-based rendering algorithms in computer graphics using frequency-based combined adaptive sampling and adaptive filtering
  Promotor: prof. dr. ir. Philip Dutré
  Assessors: prof. dr. ir. Daan Huybrechs & prof. dr. ir. Giovanni Samaey
- **Research topics**: Acceleration data structures and heuristics for ray tracing
  Global illumination algorithms
  Adaptive sampling and reconstruction techniques
- **Funding**: 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) - **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 (FWO)
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 *In Proceedings of Eurographics Symposium on Rendering - Experimental Ideas & Implementations* (June 2015), 31-39.

Teaching

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 • **Teaching assistants**: ir. Matthias Moulin
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:** Juan Alvarado, dr. Sam Corveleyn, Micol Ferranti, Roel Matthysen, ir. Matthias Moulin, Fan Yang

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) Tim Lenaers - Using the Normal Distribution Function for Constructing BSP Acceleration Data Structures • **Program**: Master of Applied Informatics • **Promotor**: prof. dr. ir. Philip Dutré • **Mentor**: ir. Matthias Moulin
2015 - 2017	KU Leuven, Leuven (Belgium) Sus Verwimp - Approximated Geometry for Efficient Visibility Calculations • **Program**: Master of Applied Informatics • **Promotor**: prof. dr. ir. Philip Dutré • **Mentors**: ir. Niels Billen, 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

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 *(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)*
Tron	Adaption of the Tron game *(written in Elm)*