

Curriculum Vitae Matthias Moulin

Personalia

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| 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
Github

<https://be.linkedin.com/in/matthias-moulin-a23a498b>
<https://github.com/matt77hias> - <https://matt77hias.github.io/>

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)
• **Research topics:** Acceleration data structures and heuristics for ray tracing
Global illumination algorithms
Adaptive sampling and reconstruction techniques
Promotor: prof. dr. ir. Philip Dutré
Assessors: prof. dr. ir. Daan Huybrechts & prof. dr. ir. Giovanni Samaey
• **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

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| 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

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

Skills

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

Publications

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| 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 & Implementations</i> (June 2015), 31-39. |

Teaching

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| 2016 - 2017 | KU Leuven, Leuven (Belgium) Computer Graphics: Project (B-KUL-H07Z5A) <ul style="list-style-type: none">• 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) <ul style="list-style-type: none">• 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) <ul style="list-style-type: none">• 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

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| 2016 - 2017 | KU Leuven, Leuven (Belgium) Menno Keustermans - Distributed Geometry for Out-of-core Coherent Distributed Ray Tracing <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• Program: Master of Science in Engineering (Computer Science)• Promotor: prof. dr. ir. Philip Dutré• Mentors: ir. Niels Billen, ir. Matthias Moulin |

Past projects

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| 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 Daemon | 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>) |