



Tom Mertens

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Personal

- Born May 26, 1979, in Belgium.
- Belgian citizen.
- Not married.

Education

- July 2005: PhD, Hasselt University, Belgium.
Title: *Efficient Rendering of Translucent Objects Using the Diffusion Approximation*.
Supervisors: Philippe Bekaert and Frank Van Reeth.
Jury: Frédo Durand (MIT), Philip Dutré (K.U. Leuven), Eddy Flerackers (UH), Marc Geysens (UH), Hans-Peter Seidel (Max Planck Institut für Informatik).
Passed with “congratulations from the jury”.
- June 2001: License degree (Master) in applied computer science, Hasselt University (UH), Belgium

Career

- October 2006 — ...: senior researcher at Expertise Centre for Digital Media (EDM, affiliated with Hasselt University).
- October 2005 — September 2006: postdoctoral research affiliate at the Massachusetts Institute of Technology (MIT), Cambridge, MA, USA. Host: Frédo Durand. Funded by the Belgian American Educational Foundation (2/3) and the host (1/3).
- August 2001 — September 2005: research assistant at the Expertise Centre for Digital Media. Supervisors: Prof. Dr. Philippe Bekaert and Prof. Dr. Frank Van Reeth.

Fellowships

- October 2005 – September 2006: research fellowship awarded by the Belgian American Educational Foundation.

Research Visits

- December 2006 — January 2007: research visit at the Massachusetts Institute of Technology (MIT), Cambridge, MA, USA. With support from Research Foundation - Flanders (FWO).
- November 2003 — January 2004: research visit at the Massachusetts Institute of Technology (MIT), Cambridge, MA, USA. Supervisors: Frédo Durand and Jan Kautz. Topic: acquisition and reproduction of weathered appearance.

- November 2002 and January 2003: research visit at Max Plank Institut für Informatik, Saarbrücken, Germany. Supervisor: Jan Kautz. Topic: rendering of translucent media.

Teaching Experience

- Teaching assistant for the image processing course, fall 2002.
- Teaching assistant for the advanced computer graphics course, spring 2004, fall 2004.
- Supervisor of 3 master students in academic year 2002 — 2003, 3 master students in 2003 — 2004 and 4 master students in 2004 — 2005.

Software Projects

- **Flight simulator**; for EDM and Androme, during 6 months in 2001 — 2002:
I wrote a flight simulator system in collaboration with four other developers and one lead developer. It consisted of a rendering engine, and a display system, which projected a 180-degree image onto a spherical screen. Our code was integrated into an existing rendering library. I was responsible for developing the software for the projection system, and for atmospheric effects in the rendering engine.
- **Radiosity system**; for Androme, during 1 month in 2000:
I wrote light transport simulator for 3D environments. It computed a radiosity solution, and returned the result as texture maps (light maps). These texture maps could then be displayed in a real-time renderer.

Skills

- Language: Dutch (native), English (fluent), French (passive knowledge)
- Computer-related skills:
 - * Expert: C/C++, OpenGL, Matlab, Latex, Powerpoint;
 - * Basic: Windows, Unix, Photoshop, Maple;
 - * Passive knowledge: Qt, MFC, Java, Pascal, Linux.

Publications and Reports

- Journal Papers
 - * *Exposure Fusion: A Simple and Practical Alternative to High Dynamic Range Photography*
Tom Mertens, Jan Kautz and Frank Van Reeth
Accepted to Computer Graphics Forum (invited/revised paper; among the best ranked papers at Pacific Graphics 2007)
 - * *Light Mixture Estimation for Spatially Varying White Balance*
Eugene Hsu, **Tom Mertens**, Sylvain Paris, Shai Avidan and Frédo Durand
In ACM Transactions on Graphics (proceedings of SIGGRAPH 2008)
 - * *Real-Time, All-Frequency Shadows in Dynamic Scenes*
Thomas Annen, Zhao Dong, **Tom Mertens**, Philippe Bekaert, Hans-Peter Seidel and Jan Kautz
In ACM Transactions on Graphics (proceedings of SIGGRAPH 2008)
 - * *Video Enhancement Using Reference Photographs*
Cosmin Ancuti, Tom Haber, **Tom Mertens** and Philippe Bekaert
To appear in The Visual Computer (invited paper; among the 35 best ranked papers at Computer Graphics International 2008)

- * *Augmented Panoramic Video*
Chris Hermans, Cedric Vanaken, **Tom Mertens**, Frank Van Reeth
and Philippe Bekaert
In Computer Graphics Forum, vol. 27, nr. 2. (proceedings of Eurographics 2008)
 - * *Self Similarity-Based Compression of Point Clouds,
with Application to Ray Tracing*
Erik Hubo, **Tom Mertens**, Tom Haber and Philippe Bekaert
In Computers and Graphics, vol. 32, nr. 2, pp. 221-234, February 2008.
(invited/revised paper; among the three best papers at Point-Based Graphics 2007)
 - * *Efficient Rendering of Local Subsurface Scattering*
Tom Mertens, Jan Kautz, Philippe Bekaert, Frank Van Reeth
and Hans-Peter Seidel
In Computer Graphics Forum, vol. 24, nr. 1, pp. 41-49, March 2005.
(invited/revised paper; among the best ranked papers at Pacific Graphics 2003)
- Internationally Refereed Conference Papers
- * *High Quality Mesostructure Acquisition Using Specularities*
Yannick Francken, Tom Cuypers, **Tom Mertens** and Philippe Bekaert
To appear in proceedings of Computer Vision and Pattern Recognition 2008 (as
poster, 28% acceptance rate)
 - * *Exponential Shadow Maps*
Thomas Annen, **Tom Mertens**, Hans-Peter Seidel, Eddy Flerackers and Jan Kautz
In proceedings of Graphics Interface, Windsor, Canada, May 28-30, 2008.
 - * *Exposure Fusion*
Tom Mertens, Jan Kautz and Frank Van Reeth
In proceedings of Pacific Graphics 2007, Maui, Hawaii, October 29 - November 2,
2007.
 - * *Self Similarity-Based Compression of Point Clouds,
with Application to Ray Tracing*
Erik Hubo, **Tom Mertens**, Tom Haber and Philippe Bekaert
In proceedings of IEEE/Eurographics Symposium on Point-Based Graphics, Septem-
ber 2 - 3, 2007, Prague, Czech Republic.
 - * *Convolution Shadow Maps*
Thomas Annen, **Tom Mertens**, Philippe Bekaert, Hans-Peter Seidel and Jan
Kautz
In proceedings of Eurographics Symposium on Rendering, Grenoble, France, June
25 - 27, 2007.
 - * *Interactive Collision Detection for Free-Viewpoint Video*
Bert De Decker, **Tom Mertens** and Philippe Bekaert
In proceedings of the Second International Conference on Computer Graphics The-
ory and Applications (GRAPP), Barcelona, Spain, 8 - 11 March, 2007.
 - * *The Quantized kd-Tree: Efficient Ray Tracing of Compressed Point Clouds*
Erik Hubo, **Tom Mertens**, Tom Haber and Philippe Bekaert
In proceedings of the IEEE Symposium on Interactive Ray Tracing, Salt Lake City,
Utah, September 18 - 20, 2006.
 - * *Texture Transfer Using Geometry Correlation*
Tom Mertens, Jan Kautz, Jiawen Chen, Philippe Bekaert and Frédo Durand

In proceedings of the Eurographics Symposium on Rendering, Nicosia, Cyprus, June 26 - 28, 2006.

- * *Video-Based Rendering Of Traffic Sequences*
Cedric Vanaken, **Tom Mertens** and Philippe Bekaert
In proceedings of WSCG, Pilsen, Czech Republic, January 30 - February 3, 2006.
- * *A Computational Approach to Simulate Subsurface Light Diffusion in Arbitrarily Shaped Objects*
Tom Haber, **Tom Mertens**, Philippe Bekaert and Frank Van Reeth
In proceedings of Graphics Interface, Victoria, British Columbia, Canada, May 9 - 11, 2005.
- * *A Self-Shadow Algorithm for Dynamic Hair using Density Clustering*
Tom Mertens, Jan Kautz, Philippe Bekaert and Frank Van Reeth
In proceedings of Eurographics Symposium on Rendering, Norrköping, Sweden, June 21 - 23, 2004.
- * *Efficient Rendering of Local Subsurface Scattering*
Tom Mertens, Jan Kautz, Philippe Bekaert, Frank Van Reeth and Hans-Peter Seidel
In proceedings of Pacific Graphics, Canmore, Canada, October 8 - 10, 2003.
- * *Interactive Rendering of Translucent Deformable Objects*
Tom Mertens, Jan Kautz, Philippe Bekaert, Hans-Peter Seidel and Frank Van Reeth
In proceedings of Eurographics Symposium on Rendering, Leuven, Belgium, June 25 - 27, 2003.
- * *An Image-Based Radiosity Representation*
Tom Mertens and Frank Van Reeth
In proceedings of Image and Vision Computing New Zealand, Dunedin, New Zealand, November 26 - 28, 2001.

– SIGGRAPH Sketches and Conference Posters

- * *Mesostructure from Specularity Using Coded Illumination*
Yannick Francken, **Tom Mertens**, Jo Gielis and Philippe Bekaert
technical sketch at SIGGRAPH 2007.
- * *Video Enhancement Using Reference Photographs*
Cosmin Ancuti, Tom Haber, **Tom Mertens** and Philippe Bekaert
technical sketch at SIGGRAPH 2007.
- * *Noise-Free BSSRDF Rendering On The Cheap*
Anders Langlands and **Tom Mertens**
poster at SIGGRAPH 2007.
- * *The Quantized kd-Tree: Compression of Huge Point Sampled Models*
Erik Hubo, **Tom Mertens** and Philippe Bekaert
technical sketch at SIGGRAPH 2006.
- * *A Self-Shadow Algorithm for Dynamic Hair using Density Clustering*
Tom Mertens, Jan Kautz, Philippe Bekaert and Frank Van Reeth
technical sketch at SIGGRAPH 2004.
- * *Interactive Rendering of Translucent Deformable Objects*
Tom Mertens, Jan Kautz, Philippe Bekaert, Hans-Peter Seidel and Frank Van

Reeth
technical sketch at SIGGRAPH 2003.

* *An Image-Based Radiosity Representation*

Tom Mertens and Frank Van Reeth

Short Presentation (Poster), Eurographics 2002. Also appeared as a poster at the Eurographics Workshop on Rendering 2002.

Professional Activities

- Reviewer for International Conferences and Journals:
 - * Eurographics (2006, 2007, 2008)
 - * Eurographics Symposium on Rendering (2003, 2004, 2005, 2006, 2007, 2008)
 - * Graphics Interface (2004, 2005)
 - * IEEE Transactions on Visualization and Computer Graphics (2006, 2007)
 - * IEEE Computer Graphics and Applications (2006, 2007)
 - * Pacific Graphics (2006)
 - * SIGGRAPH (2007, 2008)
- Program committee member:
 - * I3D: Symposium on Interactive 3D Graphics and Games (2008)
 - * GRAPP (2007, 2008)

References

- Prof. Dr. Philippe Bekaert
Expertise Centre for Digital Media — Hasselt University
Wetenschapspark 2, B-3590 Diepenbeek, Belgium
- Prof. Dr. Frédo Durand
CSAIL — Massachusetts Institute Technology
The Stata Center, D426
32 Vassar Street, Cambridge, MA 02139, USA
- Prof. Dr. Jan Kautz
University College London, Dept. of Computer Science
Malet Place, London WC1E 6BT, UK
- Prof. Dr. Hans-Peter Seidel
Max-Planck-Institut Informatik
Stuhlsatzenhausweg 85, 66123 Saarbrücken, Germany
- Prof. Dr. Frank Van Reeth
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