

Name: Jacco Bikker
Born: March 8th 1973, Barendrecht, The Netherlands
Resident of: The Netherlands
Languages: Dutch (native), English (near-native)
Married to Karin Bikker - de Bruijne.

Education

I received my PhD from the Technical University of Delft on November 5th 2012 for a thesis titled "Ray Tracing for Real-time Games". I received my B.Sc. diploma from the Hogeschool Utrecht in 1998.

Areas of interest

Realistic Interactive and Real-time Rendering through Ray Tracing, Game Development, Geometry & Visibility Determination, Software Rasterization, Code Optimization, Artificial Intelligence.

Publications

B. Eisenhardt and J. Bikker, Real-time Physically Based Sound Simulation. In: Proceedings of the 4th TMPC conference, 2015.

J. Bikker and J. van Schijndel, The Brigade Renderer: a Path Tracer for Real-time Games. 2013. International Journal of Game Technology 2013.

J. Bikker, Ray Tracing for Real-time Games, Ph.D. Thesis. Delft, 2012.

J. Bikker, Improving Data Locality for Efficient In-Core Path Tracing. 2012. In: Computer Graphics Forum, Eurographics Association.

J. van den Heuvel and J. Bikker, Detecting 3d position and orientation of a Wii remote using webcams. Proceedings of the Motion in Games Conference 2011, pages 448-458.

J. Bikker and R. Reijerse, A Precalculated Pointset for Caching Shading Information. 2009. In: EG 2009, Short Papers, Eurographics Association.

J. Bikker, Generic Ray Queries using kd-trees. 2008. In: Game Programming Gems 7. Charles River Media.

J. Bikker, Real-time Ray Tracing through the Eyes of a Game Developer. 2007. In: RT '07: Proceedings of the 2007 IEEE Symposium on Interactive Ray Tracing. IEEE Computer Society.

Dissemination

The Arauna2 Real-time Path Tracer. J. Bikker. This software was purchased by OTOY Inc.

The Brigade 2 Path Tracer. J. Bikker, J. van Schijndel. This software was purchased by OTOY Inc., and is currently used in a commercial cloud rendering platform.

Student game "It's About Time". N. Koopman, L. Brailescu, B. de Bree, D. Georgev, T. Verhoeve, S. Verbeek, T. Boone, D. van Wijk, M. Jakobs, K. Ozcan, R. van Kalmhout, J. van Schijndel and J. Bikker, 2012. ADE/IGAD, NHTV, Breda, The Netherlands.

Student game "Reflect". E. Aarts, S. Stroek, M. Pisanu, D. van Wijk, N. van Kaam, A. van der Wijst, D. Shimanovski, S. Vink, J. Knoop, J. van Schijndel and J. Bikker, 2011. ADE/IGAD, NHTV, Breda, The Netherlands.

The Brigade Path Tracer. J. Bikker, J. van Schijndel and D. van Antwerpen, 2010-2012.

Student game "A Time of Light". M. Peters, B. van de Wetering, W. van Balkom, J. Zavadil, V. Vockel, I. Tomova, M. Goliszec and J. Bikker, 2010. ADE/IGAD, NHTV, Breda, The Netherlands.

Student game "Cycle". D. de Baets, G. van Houdt, I. Abrossimow, L. Lagidse, N. Ruisch, R. van Duursen, S. Boskma, T. van der Ven and J. Bikker, 2009. ADE/IGAD, NHTV, Breda, The Netherlands.

Student game "Pirates on the Edge". J. van Schijndel, R. de Bruijne, R. Ezendam, M. van Es, R. van Halteren, C. de Heer, T. van Hoof, K. Baz, S. Dijks, P. Kartner, F. Hoekstra, B. Schutze and J. Bikker, 2008. IGAD/NHTV, Breda, The Netherlands.

Student game "Let there be Light". K. Baz, M. van Es, T. Van Hoof, D. Hoekstra, B. Schutze, R. de Bruijne, R. Ezendam, Pim Kartner and J. Bikker, 2007. IGAD/NHTV, Breda, The Netherlands.

Ray Tracing Theory and Implementation. J. Bikker, 2006. Seven articles on ray tracing, published on www.flipcode.com and devmaster.net.

Student game "Outbound". F. K. Kasper, R. Janssen, W. Schroo, M. van der Meide, J. Pijpers, L. Groen, R. Dijkstra, R. de Boer, B. Arents, T. Lunter and J. Bikker, 2006. ADE/IGAD, NHTV, Breda, The Netherlands.

Student game "Proximus Centauri". M. van Mourik, R. Plaisier, T. Lunter, J. Pijpers, P. van den Hombergh, R. Janssen, E. Verboom, W. Schroo, F. K. Kasper and J. Bikker, 2006. ADE/IGAD, NHTV, Breda, The Netherlands.

The Arauna Real-time Ray Tracer, J. Bikker, 2004-2010.

Interactive Ray Tracing. J. Bikker, 2006. Intel Software Network.

Working experience

2015 – present: Lecturer, responsible for the Computer Graphics course in the bachelor of the Game Technology / Informatics program, as part of the Virtual Worlds group at the Utrecht University. Responsible for the Advanced Graphics course and Optimization & Vectorization course in the GMT master program.

2010 - 2015: Associate Professor of Entertainment Technology at the NHTV University of Applied Sciences, Breda, The Netherlands. Responsible for applied research in the academy of Digital

Entertainment, external research partners and acquisition of funding. Responsible for the development of the curriculum for the new professional master Game Technology.

2012 – 2014: Researcher at OTOY Inc., responsible for GPU/cloud-based real-time physically-based rendering technology for games.

2006 - 2010: Senior lecturer and team manager for the IGAD program at the NHTV University of Applied Sciences, Breda, The Netherlands. Responsible for the game programming curriculum and the team of programming lecturers. Teaching topics include C++, optimization and computer graphics.

2005 - 2006: 3D engine programmer for W!Games, Amsterdam (currently known as Vanguard Games). Responsible for engine modifications and shader development. Intentional short-term contract.

2002 - 2005: Mobile game development for Overloaded Pocketmedia, Amsterdam. Development of several high-performance 3D engines and 3D games for Symbian mobile devices. Role: CTO & team lead.

1999 - 2002: Engines & tools development for Davilex Software, Houten, The Netherlands. Development of a software 3D engine for an interior design application. Development of an experimental visibility system to be used in future games. Development of a scene graph optimizer for an existing 3D engine.

1997 - 1999: 3D engine development for Lost Boys Interactive, Amsterdam. Development of a portal-based hardware accelerated 3D engine supporting shadows, multiple dynamic light sources, projected textures and dynamic light maps, linked to the application using VRML.

Other activities

2015:

“Ray Tracing for Games”, guest course for the Czech Technical University, consisting of ten lectures and lab sessions over the course of two weeks.

2008:

Worked as a visiting professor with the Intel Research Lab in Santa Clara for a period of six weeks in the summer of 2008.

2007:

Keynote speaker for the RT07 IEEE/EG Symposium on Interactive Ray Tracing.

2004 - 2006:

Development of the programmers curriculum of the IGAD course (International Game Architecture and Design). IGAD is a four-year course offered by the NHTV University of Applied Sciences, in which visual artists and programmers work together to a great extent, while still focusing on their own specialism. This course has been accredited by the Dutch government and started in September 2006.

Development of the Arauna ray tracer, a real-time ray tracer aimed at game development, focusing on interactive frame rates for scenes of competitive visual quality. Arauna is used for a student project as part of the IGAD course to explore the possibility of ray traced games in the near future.

Various guest lectures on real-time physically-based rendering for the University of Technology in Delft, the Bonn-Rhein-Sieg University of Applied Sciences and the Technical University of Vienna, as well as for the research group of Intel in Santa Clara and Saarbrücken and Ubisoft Paris.

Game programming lectures and course material development for gifted children (~10 years old), using SuperLogo and BlitzBasic.

~1998 - 2004:

Portal Column, series of online tutorials on 3D engine development for Flipcode.com.

Various PocketPC games: Lemmings (serving as an example for a Windows Mobile game development library, EasyCE), Nutcracker (published title), Nutcracker 2.

PC game Logos, a visual programming / puzzle game for children.

MobileCore, a hardware abstraction library for mobile devices (Symbian/PocketPC), for an article on Gamasutra.

WinAlice, a native windows port of the Loebner-price winning Alice chatbot by Dr. Wallace, including several significant enhancements for improved natural conversation.

~1994 - 1998:

Focus 3D engine, optimized software rasterization with portal rendering, bumpmapping and bilinear filtering (assembler/C).

Alpha 3D engine, optimized software 3D engine written in Pascal.

Echoes of the Past, demo for the TakeOver '96 demo competition (1st place).

Various online articles: Thoughts on visibility determination, a tutorial on the c-buffer algorithm, fast bilinear filtering, voxel polygons, casting shadows with detail objects.

References:

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