

Michal Valient - Curriculum vitae

Personal information

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Date of birth: September 15, 1978

Summary

- 10 years of professional experience in Graphics software, computer games development and modern real-time rendering with DirectX and Playstation3 APIs.
- Master degree in Computer science – Computer graphics and Parallel computations.
- Over 2 years of professional experience in Java (J2EE) software development.
- Skilled in team leadership, project management, software analysis, design and deployment.
- Actively publishing on graphics conferences and in graphics books and journals.

Education

Sep 1997 – March 2006 **Comenius University, Bratislava, Slovakia** Faculty of Mathematics, Physics and Computer Science

- Ph.D. studies in the field of Applied Computer Science – on hiatus.
 - Field of study: Real-Time rendering - shadows, light transfer and special effects.
 - Dissertation exams: Real-time rendering, Modelling and simulation, Automata theory.
- October 2003 - received Rerum Naturalium Doctor (RNDr.) title in Computer Science.
 - Thesis: Lighting and shading for real-time applications.
- April 2003 - Received Master degree (Mgr.) title in Computer science (equivalent to M.Sc.)
 - Master thesis: Accelerated real-time rendering.
 - Field of study: Computer science - Computer graphics, Parallel computations.
 - State exams: Computer graphics Parallel computations, Computer science and Mathematics.

Sep 1993 – Sep 1997 **Grammar school – Gymnázium Topoľčany, Slovakia**

- School-leaving examination subjects: Mathematics, Physics, Computer science, Slovak language.

Selected publications

- Valient, M., "*Practical Occlusion Culling in Killzone 3*", SIGGRAPH 2011, Vancouver.
- Valient, M., "*Rendering technology of Killzone 2*", Game Developers Conference 2009, San Francisco.
- Valient, M., "*Deferred rendering in Killzone 2*", Develop Conference 2007, Brighton.
- Valient, M., "*Stable rendering of cascaded shadow maps*", In: Engel, W. F., et al., "ShaderX6 – Advanced Rendering Techniques", Charles River Media, 2008
- Valient, M., "*Hardware Generated Object Silhouettes*", In: G - Journal for Geometry and Graphics, No 3, Volume 2, Slovak Society for Geometry and Graphics, 2005, ISSN 1336-524X.
- Valient, M., Bujnak, T., "*GPU Friendly, Anti-aliased, Soft Shadow Mapping*", In: ACM Proceedings of SCCG 2005, ACM Press, October 2005, ISBN 1-59593-203-6.
- Valient, M., W., H., de Boer., "*Fractional-Disk Soft Shadows*", In: Engel, W. F., et al., "ShaderX3 – Advanced Rendering With DirectX And OpenGL", Charles River Media, November 2004, ISBN 1-58450-357-2
- Valient, M., "*Advanced lighting and shading with Direct3D 9*", In: Engel, W. F., et al., "ShaderX2 – Shader Introduction & Tutorial", Wordware Inc., October 2003, ISBN 155622902X.
- Valient, M., "*Shadow mapping with Direct3D 9*", In: Engel, W. F., et al., "ShaderX2 – Shader Introduction & Tutorial", Wordware Inc., October 2003, ISBN 155622902X.
- Valient, M., "*Advanced lighting and shading with Direct3D*", CESC 2003 conference poster

Skills overview

Programming languages	<ul style="list-style-type: none">• C, C++, Object Pascal, i86 Assembler, SSE, AltiVec, Java, JavaScript• HTML, XML/XSLT, PHP, ASP
Technologies	<ul style="list-style-type: none">• Playstation3 – PPU, SPU and RSX programming.• Direct3D and HLSL, OpenGL, CG and GLSL• Win32 API, MFC, ATL, COM, ActiveX, STL, .NET Framework• J2EE/Servlets, PL-SQL, T-SQL
Tools	<ul style="list-style-type: none">• PS3 development tools (SN Systems, GPAD)• MS Visual Studio.NET, Oracle jDeveloper, Eclipse• Hansoft, Rational Rose, MS Visio, MS Project• Apache+JServ, Oracle Application Server, Tomcat• MS SQL Server 7, Oracle 8i (Linux and Windows)• MS SQL Server Enterprise manager, ERwin Data modeler• Perforce, SVN, MS SourceSafe, CVS
Management	<ul style="list-style-type: none">• Project and team management, Resource management, Leadership skills, Rational Unified Process, Agile Software Development.
Foreign languages	<ul style="list-style-type: none">• English (fluent), German (basics), Dutch (basics), Czech (fluent)

Work experience

April 2006 – present	Guerrilla BV - www.guerrilla-games.com Herengracht 601, 1017 CE Amsterdam, The Netherlands	Lead Tech / Senior technology programmer
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- Working as a Lead Tech on Killzone 3 and future unannounced projects
 - Management of a team of senior and principal technology programmers.
 - Design, implementation and optimization of various engine systems for Killzone 3 such as texture streaming system, memory defragmentation, customizable shader system for lights.
 - Shaping the future of the Guerrilla engine.
 - Working on next generation unified lighting solution for highly complex scenes.
- Worked as a Senior Technology Programmer on Killzone 2.
 - Design, implementation and optimization of Guerrilla deferred rendering system.
 - Research and implementation of engine shadowing and lighting solutions.
 - Implementation of highly efficient rendering code running entirely on PS3 SPU's.
 - Introduction of unique lock-free memory allocation scheme which allows concurrent allocations from PPU, SPU's and RSX. Used for display list and all resources used by RSX.
 - RSX performance profiling and optimizations.
- Technologies: Various PS3 APIs, Win32 API, OpenGL.
- Tools: Perforce, Hansoft, SN Systems tools for PS3, MS Visual Studio.

[Guerrilla BV is wholly owned subsidiary of Sony Computer Entertainment Europe (SCEE). Killzone games belong to the best rated and most anticipated games for Playstation3]

May 2003 - April 2006	Caligari Corporation - www.caligari.com 1959 Landings Drive, Mountain View, CA	Project leader / Senior developer / Analyst and designer
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- Worked as a project leader, senior developer, analyst and designer on trueSpace7 and truePlay products and on new generation application architecture shared among Caligari products.
 - trueSpace7 is new generation of popular 3D modeling, animation and rendering package.
 - truePlay is free tool for network collaboration in complex 3D virtual worlds.
- Responsible for analysis, design and development of DirectX 9 based real-time rendering engine.
 - Used as primary visualization and modeling engine in trueSpace7 and truePlay.
 - Support for shadow mapping with different quality and filtering levels
 - Runtime compilation of surface and light shaders into working HLSL Effect allows rendering of arbitrary combination of lights and objects.
 - System of render target and scene layer trees allows production of custom post-processing and transition effects such as glow and bloom.

- Responsible for complete development, analysis and design of graph based material editor tool.
 - Allows design of custom DirectX 9 HLSL object surface shaders and light shaders as well as LUA based shaders for photorealistic renderers.
 - Shaders are created by user by linking low level operation nodes into higher level blocks.
- Implemented Rational Unified Process (RUP) in the distributed team environment – customization of development cycles and documents, definition of testing process and training of developers.
- Technologies: Visual C++, COM, ATL, Win32 API, DirectX9, HLSL and D3DX Effects.
- Tools: CVS, Rational Rose, MS Visual Studio, trueSpace, Microsoft Project, Inno setup.

[Caligari Corporation was one of the leading companies in the 3D authoring market since 1986.]

Nov 2002 - April 2003	Full-time work on the master thesis : Accelerated real-time rendering - www.dimension3.sk	Research and development
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- Research and development of real-time lighting and shading effects and shadow algorithms.
- Technologies: Visual C++, STL, DirectX 8 and 9, Assembler shaders and HLSL
- Tools: MS Visual Studio, Rational Rose, 3D Studio MAX

Oct 2000 - Nov 2002	Unicorn Group, s.r.o - www.unicorn.sk Seberinoho 1, 821 01 Bratislava, Slovakia	Director of division/ Project manager/Analyst/ Senior developer
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- Worked on projects based on proprietary Unicorn Enterprise System Framework as a developer, analyst and designer, later (since May 2001) as a team leader and project manager. Also participated in Unicorn Enterprise System Framework analysis and development. Since Jan 2002 worked in the role of a director of Slovak software development division.
Projects:
 - Enterprise information system (EIS) for Unicorn Holding - Team leader, developer, analyst
 - Screening of know-how for Ceska Sporitelna - Project leader, Programmer, Deployment
 - Prototype of IS for Czech government - Senior programmer
 - Know-how management for Unicorn Holding - Project leader and analyst
 - Technologies: J2EE/Servlets, XML/XSLT based page generation framework, Object oriented database access framework (EJB), HTML, JavaScript, Oracle8i (Linux and Windows), Apache+JServ later Oracle Application Server later Tomcat
 - Tools: Oracle jDeveloper later Eclipse, MS Interdev, ERwin Data modeler, Rational Rose, MS Visio, SourceSafe later CVS.
- Worked as a project leader and developer on software for audit of exceptional events for Slovenska Sporitelna
 - Technologies: Internet Information Services based Intranet application, HTML, JavaScript, ASP, Visual Basic, MS SQL Server, COM+, ActiveX
 - Tools: Visual Studio, Rational Rose, MS SQL Enterprise manager, ERwin Data modeler, SourceSafe, InstallShield for MS Installer
- Throughout planning, managing and team leading using procedures of Rational Unified Process methodology and tools
- Courses: Advanced UML, Rational Unified Process, Oracle PL-SQL, Java, Advanced Java, J2EE, Management courses

[Unicorn Group, s.r.o. Bratislava is branch of Czech Unicorn Holding, a.s. Prague, one of largest Czech software development and integration companies. Slovenska Sporitelna is largest Slovak commercial bank. Ceska Sporitelna is one of the oldest and largest banks in Czech republic.]

May 2000 - Oct 2000 **MicroStep-HDO, s.r.o** - www.microstep-hdo.sk Developer and analyst
Tomasikova 28, 82101 Bratislava, Slovakia

- Worked on monitoring software for paper manufacturer TENTO a.s., Zilina, Slovakia
 - Technologies: Client application on Windows, Object Pascal, SQL Anywhere
 - Tools: Borland Delphi

[MicroStep-HDO is the leading developer for Czech and Slovak energy and heat distribution companies]

Mar 2000 - Aug 2000 **Freelance developer** Developer and analyst

- Network theater ticket selling system for MegaMusic Production, Bratislava, Slovakia
 - Role: Client/Server framework developer and analyst
 - Technologies: Client / Server application, MS SQL, MS Terminal Services
 - Tools: Borland C++ Builder, MS SQL Enterprise manager

Hobbies

- Computer games and graphics demos, scuba diving, skiing, running and books.