

JOSHUA BARCZAK

<http://www.joshbarczak.com>

SUMMARY OF QUALIFICATIONS

- Expertise in computer graphics, geometry processing, and interactive simulation.
- Experience developing scalable C++ codebases for production use.
- Strong GPU programming background. Experience with DirectX9, DirectX11, DirectCompute, OpenGL. Shader development (HLSL, GLSL).
- Proficient in C++, including STL and SSE intrinsics. Also familiar with C#, Lua, Java, Visual Basic, SQL and various other languages.
- Implements complicated algorithms for fun and profit.

EMPLOYMENT HISTORY

Senior Graphics Engineer, Firaxis Games

March 2009 – Present

- Contributed to proprietary DX11-based rendering framework.
- Graphics engineering for Civilization V. Implemented cinematic rendering system for leader scenes. Contributed various graphics subsystems for main game.
- Xbox 360 performance analysis for X-Com.
- Rendering research and toolchain development for unannounced title.

Software Engineer, AMD (former ATI)

Jan 2006 – March 2009

- As part of a team, developed and maintained a multi-platform rendering engine for product launch demos. (DX9, DX10, DX11, OpenGL).
- Implemented rendering algorithms and shaders for production of GPU launch demos, including motion blur, depth of field, shadow mapping, dynamic SH lighting, terrain rendering, character animation, culling, and LOD management.
- Designed and built a scalable parallel physics engine for the Radeon HD3000 launch demo.
- Conducted independent research on real-time rendering. Developed and released the *ATI Tootle* mesh optimization library based on research published in I3D 2006.

Intern, ATI Research

Summers 2004, 2005

- Implemented prototype applications to investigate use cases for DX10 geometry shaders.
- Developed a D3D9 wrapper DLL which provided a transparent framework for automatic multi-pass partitioning of pixel shaders.

Graduate Research Assistant, UMBC

Sep 2003 - Dec 2004

- Developed a testbed software rasterizer with procedural shading capability. Modified an existing shader compiler to target this rasterizer.
- Conducted research into automatic shader simplification, focusing on novel compiler transformations.

Teaching Assistant, UMBC

Jan-Dec 2005

- Designed and graded projects for advanced undergraduate courses, including introductory computer graphics courses.

Intern, BD Diagnostic Systems

Summers 2001, 2002, 2003

- Developed and maintained various engineering support tools and database applications using Visual Basic, C++, and SQL Server.

EDUCATION

M.S. Computer Science, UMBC

Sep 2003 - Jan 2006

- Concentration in computer graphics.
- 4.0 GPA

B.S. Computer Science, UMBC

Sep 1999 - May 2003

- 3.85 GPA

PERSONAL PROJECTS

- I have in-depth knowledge of raytracing and global illumination, derived from independent study. I have implemented an optimized raytracing and photon mapping engine as a personal hobby.
- I have also developed and released an open-source template library which implements several common raytracing algorithms. For more information, see:
<http://sourceforge.net/projects/tinyrt/>.

References available upon request