

**Michael Noland**  
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A senior graphics and systems engineer with an innate ability to quickly learn new technologies and a strong desire to tackle difficult and interesting problems. Experienced in real-time graphics, performance/memory critical programming, concurrent programming, and cross-platform console development. Contributed to 9 shipped products across 5 platforms.

## **Emergent Game Technologies**

*Senior Software Engineer, Core Runtime (2009 – Present)*

*Software Engineer, Gamebryo (2006 – 2009)*

- Sprint group leader with a broad knowledge of all runtime aspects of the Gamebryo engine, and a deep understanding of the renderers and system/foundational libraries facilitating the launch of four releases of Gamebryo and two releases of Gamebryo LightSpeed.
- Designed, implemented, and optimized LibGCM based renderer for PS3, providing PPU side improvements of up to 5X depending on the workloads.
- Designed and implemented new features for the core runtime (across PC, PS3, Xbox 360, and Wii), such as lock-free data structures, batched shader-driven rendering, and per-thread allocators.
- Proposed and built a sample testing infrastructure and a performance analysis test bed.
- Ported, profiled and optimized demos for the PS3 including Emerge (GDC 2007), Forbidden Terror on Space Station Z (GDC 2008) and Mangled Metal (GDC 2009).
- Increased customer satisfaction by working closely with them on profiling and optimization of their titles, including on-site visits.
- Designed and built a deferred lighting system prototype for Gamebryo.

## **University of North Carolina – Chapel Hill**

*Research Assistant, 3D Medical Consultation Group (2004 – 2006)*

- Characterized 3D inertial measurement units and designed filters for use in a PDA tracking application.
- Designed a “magic lens” application that displays a 3D dataset in relation to a tracked PDA intended for use in emergency telemedicine applications.

## **Mitsubishi Electric Research Laboratory**

*Research Assistant (Summer 2005)*

- Researched high speed optical tracking via spatial labeling and various projector-based technologies.
- Designed and built custom hardware, firmware, and software for a real-time high speed optical tracker.

## **University of Missouri – Columbia**

*Developer, Computer Human Interaction Laboratory (2003 – 2004)*

- Assisted with the establishment of the laboratory.
- Designed and developed several projects for the Art & Archaeology Museum, including a 3D game and a panoramic virtual reality exhibit using position tracking hardware.
- Performed modeling and animation for an engineering fundraising video.
- Designed and implemented a multi-screen kiosk for the display of digitized artifacts.
- Taught recitations for Algorithm Design and Programming 1.

*Undergraduate Research Position (2002 – 2003)*

- Ported the Interactive Image Spreadsheet System (IISS/QIS) from Forms/GL to QT/OpenGL.

## **Symbiosys Software / Neko Technologies**

*Programmer (1998 – 2000)*

- Developed the special effects system and scripting engine for the game Absolute Terror.

## Education

### *University of North Carolina – Chapel Hill*

- Masters Degree, Computer Science (May 2006)

### *University of Missouri – Columbia*

- B.S., Computer Science - Magna Cum Laude (May 2004)
- BSCoE, Computer Engineering - Magna Cum Laude (May 2004)
- Minors in Mathematics and History

## Key skills

### *Languages*

- Proficient with: C++, C, Assembly (ARM/Thumb, 6502), Shaders (Cg/HLSL/NSF/FX)
- Comfortable with: C#, Object Pascal, other flavors of assembly (PPC, IA-32 & PIC18)

### *Platforms*

- Proficient with: Playstation 3, Xbox 360, Win32, Game Boy Advance, NES
- Comfortable with: Nintendo Wii, Nintendo DS

### *Tools and Environments*

- Proficient with: Visual Studio, ProDG, GPAD, Tuner, PIX, Perforce, MS Office, Delphi, DevTrack
- Comfortable working in: 3DS Max, Maya, Paint.NET, Audacity, Sfxr ('programmer' art & sound)

### *Middleware and libraries*

- Proficient with: Gamebryo, D3D9, LibGCM
- Comfortable with: XNA, OpenGL, GX, FMod, Windows Forms

## Shipped titles and products

Contributed (via Gamebryo) to many titles released since late 2006

- <http://www.emergent.net/en/Clients--Titles/>
- Gamebryo LightSpeed 3.1 (October 2009)
- Gamebryo LightSpeed 3.0 (May 2009)
- Gamebryo 2.6 (October 2008)
- Gamebryo 2.5 (June 2008)
- Gamebryo 2.3 (April 2007)
- Gamebryo 2.2.1 (October 2006)

2004Mbit Competition Cartridge

- Published by gbadev.org for the Game Boy Advance, 2005.
- Credits: Project Coordinator

Mappy VM Development Suite for the Game Boy Advance

- Mappy VM 0.9 (April 2003)
- Mappy VM 0.7 (July 2001)
- Mappy VM 0.5 (April 2001)

Absolute Terror

- Published by Crystal Interactive for PC, 2001
- Credits: Programmer (Special Effects, Scripting Engine)

# Supplemental information

## Publications

- *Prakash: lighting aware motion capture using photosensing markers and multiplexed illuminators* – ACM SIGGRAPH 2007 Papers.
- *Complementary Tracking and Two-Handed Interaction for Remote 3D Medical Consultation with a PDA* – Proceedings of Trends and Issues in Tracking for Virtual Environments, Workshop at the IEEE Virtual Reality 2007 Conference.
- *Instant replay using high speed motion capture and projected overlay* – ACM SIGGRAPH 2006 Sketches.
- *Improving, Expanding and Extending 3D Telepresence* – Proceedings of International Workshop on Advanced Information Processing for Ubiquitous Networks, International Conference on Artificial Reality and Telexistence 2005.
- *Inferring a Proprietary Wireless L3 Protocol From Packet Traces* – Technical Report, UNC-CH 2005.

## Personal projects

- *Sunny Day* – XNA puzzle game made in 24 hours for the 2009 Triangle Game Jam (<http://trianglegamejam.com/games.php#SunnyDay>).
- *Plus40* – An Advance Wars clone in C++/OpenGL with a C# toolchain.
- *Space Fish* – XNA physics sandbox game created for the first Global Game Jam (<http://globalgamejam.org/games/spacefish>).
- *Robotender* – Automatic drink dispenser with touch screen control (<http://www.robotender.com>).
- *Multitouch coffee table prototypes* – Built FTIR, DI, and LLP multitouch screen prototypes.
- *Pixelated Martini Roller* – XNA platformer game with integrated level editor made in 24 hours for the 2008 Triangle Game Jam (<http://trianglegamejam.com/games.php#PixelatedMartiniRoller>).
- *SDIS/Z* – Experimental program transformation toolkit (manipulates machine code into readable C-like code; 6502 and limited ARM support).
- *LibNDS* – Co-created the first free, legal library for unlicensed programming on the Nintendo DS (<http://sourceforge.net/projects/devkitpro/files/>).
- *NDSTech Wiki* – Created and maintained a Wiki (<http://www.bottledlight.com/ds/>) of information about Nintendo DS development. Reverse-engineered much of the information contained there.
- *Mappy VM* – Development tool (<http://www.bottledlight.com/mappy/>) for the GBA that emulates the hardware and provides source-level debugging and real-time viewers of system information such as VRAM and I/O register contents.
- *UNL-YAROM* – CPLD+Flash ROM based development cartridge for the Nintendo Entertainment System capable of emulating many mapper configurations without reprogramming.
- Software 3D engines for DOS and GBA, various demo effects, MOD player.
- Various 3D engines, including a real-time raytracer and Quake 3 map viewer with collision detection.
- Numerous 2D map editors, small games, and work on other emulators (NES, SMS, GB, PSX).

## School projects

- Physically-based model of the human face, with muscle activation determined by transcribed speech.
- Verilog implementation of a full 3D rendering pipeline on a Virtex-2 FPGA (fragment processor group).
- *AMaze* – a game for persons with visual impairment, providing spatial audio, haptic feedback, and user-friendly map editor (<http://www.cs.unc.edu/Research/assist/et/2005/AMaze.html>).
- Extracting intrinsic images (reflectance and shading) via image analogies.
- Custom arcade game console (compatible with any JAMMA cabinet) and asteroids-style game.
- Autonomous robot capable of finding golf balls, grabbing them, and scooting them through a goal.
- *Cactus Jack and the adventures of the deranged space monkeys* – 3D birds-eye view video game in C++/OpenGL.