

Douglas Kavendek

Software Engineer

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Summary of Experience

- n 13 years experience in C++
- n 11 years experience with OpenGL
- n 11 years experience in PHP, MySQL, HTML, CSS, and JavaScript
- n 5 years experience with Gamebryo engine, 2 years with Ogre 3d renderer

Professional Experience

Syandus Inc. – Exton, PA – 2007 - Present

Senior Software Engineer

Syandus is a small team that creates interactive 3D simulations. I have been a part of every stage of the creative process from design and development to release and analytics.

- n Recently completed and released turn-based immunobiology strategy game, ImmuneQuest, sponsored by the National Science Foundation. Built for Windows and Mac, with iOS and Android ports currently under development.
 - o Twelve levels available, in use by over 600 students and educators.
 - o Created most of the UI systems, such as the in-game HUD, main menu, options, store, real-time leaderboards, tutorial system, question and information panels, and level stats pages.
 - o Set up and maintained back-end for account management and usage metrics, automatically generating and displaying performance data in comparison to each user's peers.
 - o Developed store and payment gateways for Amazon, Paypal, and credit card purchases of additional in-game levels.
- n Our main apps include 3D environments consisting of multiple 'sandbox' modules (similar to 'levels' in a game) linked in to the main game engine, written in both C++ and Lua. They have been used for physician education materials, presentation tools, and as centerpieces at several conventions.
 - o Created 10+ sandboxes for eight released applications involving six corporate clients. Recent work has been creation of a framework for physician education modules, used to create three additional applications.
 - o Incorporated 2D and 3D art assets, with a major focus on controlling models and their animations, including fully rigged, interactive human characters, animated organs, and environments both organic and architectural. Animations included skeletal bones and vertex morphs.
 - o Dynamic user interfaces custom for each sandbox, including UI elements (panels, buttons, document markup) along with more complex gauges, graphs, particles, and direct 3D interaction. Also created an interactive guide and help system, data content browser, and other interface frameworks.
 - o Most applications created with remote synchronization capability for shared online sessions, where attendees come together and jointly interact with the simulation, communicating over VOIP.
- n Created the ALIVE Med Hub: the distribution channel and front-end for many of our applications. Originally a rudimentary launcher that had to be rebuilt for each release, I redesigned it to be data driven, modular, and reusable for all subsequent releases. Written in C++ and using the Win32 API directly.
 - o Added HTTPS interface to synchronize users, data, applications, and software updates with main server. Includes account creation and management; user

authentication and access controls, as well as online session management and remote matchmaking.

- Usage metrics, error logs, and crash reports automatically sent to our servers for easier debugging. Contributed 60+ pages of documentation.
- Fully skinned and animated. Modelled to resemble modern medical devices with contours, gradients, and smooth curves.

- n Responsible for nearly all web development needs, from user-centric account management and download pages to back-end admin, database, testing, and analytics tools.
- Migrated web services from Windows hosting to a virtual Centos Linux instance on Amazon Web Services (AWS). Created and maintained several server instances, including on-demand development servers for testing.
- Created MySQL database as back-end for ALIVE Med Hub. Designed specs for and maintained 60+ tables. Currently used by about 3,300 physicians and marketers.
- Integrated several AWS services into our web scheme: EC2 for our virtual server instances, S3 and EBS for file hosting and nightly backups, and Glacier for long-term backups.

3 Fright –2013 - Present

- n Currently developing multiplayer 3D fighting game, Frighter Fighter, which will be ready for iOS release in early 2015.
- Created rendering engine myself to better understand OpenGL ES2+ and OpenGL3+ concepts. Includes animated 3D models and levels, sprites and particle systems, 2D UI and text rendering.
- Architected basic game engine structures: physics, abstracted player controls, user configuration, music and sound, levels and gameplay, etc.
- Cross platform, currently runs on Windows, Mac, and iOS, with plans for Android support in the future.

Education and Academic Experience

Stevens Institute of Technology, Hoboken, NJ

MS & BS in Computer Science

- n Graduate Assistantship, Stevens Institute, January - December 2006
- Researched and experimented with weathering of polygonal models using variations on photon mapping and fluid simulation.
- Included polygonal subdivision for model deformation as well as several visualizations of vector fields to better see the flow of particles.

- n Capstone project, Stevens Institute, October 2004 - May 2005
- Lead graphics programmer for real-time 3D role-playing game.
- Designed and developed terrain engine, including level-of-detail transitions, polygon smoothing, multi-texturing, 3D models and world population.

- n Summer Scholars research, Stevens Institute, Summer 2004
- Researched photon mapping and non-photorealistic rendering via raytracing.

Skills

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| n C++, C, STL | n Gamebryo, Ogre, SDL |
| n OpenGL, OpenGL ES, GLSL | n Windows, CentOS, NetBSD |
| n Lua, Bash | n Subversion, Perforce, Git |
| n PHP, MySQL, HTML, CSS, | n Win32, Boost, Bink, Freetype |
| Javascript, jQuery, Flash, ActionScript | n Visual Studio, Xcode, make |