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Objective

I desire to work for a large, leading-edge company, designing software for advanced and interactive applications. The position should lead to software product management, and offer the possibility of further education and training.

Technical Skills

Languages
- Web: HTML, Javascript, AJAX, CSS, PHP
- Application: C, C++, Java, C#, VB6, VB.NET, Assembly, Scheme
- Data: SQL, XML, XPath, XSLT, JSON
- Other: LUA, Arduino, MATLAB

Software & Technologies
- Frameworks: jQuery, Prototype, Photon, Boost, OpenNI, NITE
- Graphics: DirectX, OpenGL, C4, JME, Irrlicht, Unity3D
- Database: MySQL, Microsoft SQL Server, sqlite, Amazon S3
- Unit Testing: JUnit, EclEmma, TestDriven.NET, NUnit, NCover
- Platforms: Microsoft Windows, Mac OSX, and Linux (Fedora, Slackware, Ubuntu, OpenSUSE)
- Other: Adobe Photoshop, Microsoft Visual Studio, Eclipse, NetBeans, WireShark, IDA Pro

Achievements

Application and Networking Development
- Publish/subscribe pattern over TCP in Java for a Solitaire game server & client
- Multi-threaded POSIX inter-process messaging system within the Linux kernel, in pure C
- 'Latte' compiler in Java using ANTLR; heavy use of regular expressions and code generation
- Serialized objects for game communication over UDP in C# using the Photon Framework
- Multi-threaded implementation of Ken Johnson's chat and database protocol server over TCP in Java; uses serialization, binary packets, thread pooling, factories, singletons etc.
- Reverse engineered Starcraft's in-game UDP protocol, to emulate its network library in VB6

Web Development
- Real-time browser chat system modeled after IRC using AJAX, PHP and MySQL
- Scalable open source XAMPP system to manage a non-profit food pantry's clients, inventory, distribution and reporting; strong focus on customer relations and user satisfaction
- Servlet to access Twitter's RESTful web API in Java; deployed to the Google App Engine
- New personal tech blog about application, web and game development, software security, artificial intelligence, hardware hacking, virtual reality and genetic computation

Game Development and Virtual Reality
- Wrote a depth correction algorithm to fix the Kinect's infrared shadow in C#; has been blogged about on kinect-hacks.com
- The Machine: a 3D first-person puzzle-solving platform game in C++, using the C4 engine; won best game, judged by a panel of game industry professionals
- The Machine 2: a sequel that includes birdoid-spider enemies with state machines, pathfinding, steering mechanisms, and new game mechanics
- Lead technical position in a 25+ person team for an ARG (alternate reality game)
- Built a 3D input device using capacitance with an Arduino microcontroller, C# and Unity3D
- Tangible level editor using an Arduino microcontroller, resistor networks, a multiplexer and Unity3D; it allows a user to place blocks in the real world to design a virtual game world
- Chess game server & client over TCP using the Java Monkey Engine and Project DarkStar
- Mouse controller, skeletal tracking and 3D point cloud generation using the Kinect libraries OpenNI and NITE, in C#

Artificial Intelligence

- Emergent team behavior strategies for a soccer game, in C++
- Pathfinding using the A-Star (A*) algorithm for an agent in a first-person shooter, in C++
- Modular chess opponent in Java using heuristics, minimax and alpha-beta pruning
- Directed acyclic behavior trees including virtual traversal methods, in C#
- Genetic algorithms with static & dynamic analyses on behavior trees, to generate unique behaviors in game agents; modeled after biological mutation
- Perceptual system using the message broker pattern for a game agent that includes vision, hearing, smell, haptics and kinesthesia, that generates virtual emotions, in C#
- Artificial neural network implementation in C# to control a finite state machine; uses a feed-forward firing model and supervised learning by backpropagation

Experience

Senior Teaching Assistant   Fall of 2010
Worcester Polytechnic Institute – Worcester, MA
CS 4401: Software Security Engineering

- Threat modeling, DRM, cryptography, same-origin policy
- SQL injection, CSRF, XSS, reverse engineering, stack smashing, buffer overflows
- Presentation on distributed botnet security

Software Developer   2009 – 2010
pbxnsip – Burlington, MA
Web development, application development, server management and forum administration

- Microsoft Outlook add-in to transfer vCard data via WebDAV to a pbx server
- Web attendant console with a Java applet SIP client for call attendants, to manage phone extensions, active calls, orbits and conference calls on a pbx domain with ease
- Designed XML protocol over HTTP transport layer for relaying pbx server state

Software Developer Paid Internship   Summer of 2009
XL Insurance – Hartford, CT
Tool development, reporting, data warehousing, SDLC and agile development

- SharePoint upgrade and migration from a server in Hartford to a data center in Zurich
- Developed custom work item types and import tool for Team Foundation Server
- SOAP web service, consumed by a SharePoint monitoring system to send notifications of job failures and unexpectedly long run times, integrated with SSRS reporting of long term stats
- Started the insurance data warehouse developers' on-boarding wiki and SharePoint document repository; currently used to introduce newly hired developers to XLI's IT division
- The Configuration Management Database tool, to allow multi-user access to server metadata across the company's VPN, a plugin in C# for XL's Director's Chair application

Senior Software Engineer   2006 – Present (on call)
Fingertips, LLC – Suffield, CT
Web design & development, server management and database development

- National community site to integrate forums, blogs, chat, photos, videos, music, local information, classified ads, real estate, calendars, news, businesses etc.
- Personalized home page system modeled after iGoogle, using AJAX with drap & drop
- Flexible advertisement system based on community scope with end-user controls

Education

Worcester Polytechnic Institute   2007 – Present
Worcester, MA

- Anticipated graduation date: May, 2011
- B.S., Computer Science
- B.S., Interactive Media & Game Development
- GPA: 3.36
- F. Harold Daniel's Scholarship
- Graduating with distinction
- Dean's List the past three semesters