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Skills:

- * Flexible team player with strong technical skills in software, graphics, audio, and real world problem solving.
- * GUI design and implementation using Java Swing, OSX/iOS Cocoa/CocoaTouch, Windows Phone 7, XAML, Android/XML, Matlab, tcl/tk/expect.
- * Mobile development: iPhone, Windows Phone 7 and Android.
- * Software engineer: application software design, implementation and validation.
- * Computer simulation and modeling.
- * Information analysis and visualization, Systems analysis and optimization.
- * Technical writing and editing.
- * Digital signal processing (DSP).

Work Experience:

iPhone app Software Engineer. TouchTunes, Inc, Montreal, Quebec, Canada. Online/remote, current 2011. Design and develop features for iPhone app used to control music playback via company web servers. UIKit, JSON, Xcode 4.2 & iOS 5 beta, Interface Builder, Instruments.

Math/Science/Software Consultant. AVTEC (Alaska's Institute of Technology), Seward/Anchorage, AK. Online, current 2011. Support and advise teacher training class for developing iPad Apps in math, science, business education. This is a distributed learning environment prototype class that is intended be deployed widely in the Alaska school system. Multi level focus includes App design and planning, defining functional requirements and UI/UX design for useful real world apps such as teaching principles of accounting, basic math and science, remote collaboration and information sharing. Provide training and advice to class participants for using iOS tools (Xcode, Interface Builder, Instruments) and membership in the Apple's ADC program for iOS. Guide class participants in understanding principles of coding, both in general and specifically for Objective-C. Develop and demonstrate example projects in iOS and NetLogo.

Windows Phone 7 Lead Developer. Folium Partners, Ashland, OR, 2011. Evaluated Windows Phone 7 platform for audio book publisher to extend into a new business area their iOS app catalog of audio book apps. Designed/implemented prototype audio book apps for WP7. Ported app production line from iOS to WP7. Extreme rapid prototyping, with delivery of 1.0 production app template in 6 weeks. Trained production people for mass production of audio book apps for WP7. As of late July 2011, Folium Partners has posted about 200 audio book apps based on the code I delivered to them for this project.

iOS App Designer and Development Project Architect. Southern Oregon University, Ashland, OR, 2011. Designed iOS app for Radio Theatre format children's stories project. Directed the app development with computer science undergrads as coders. Coordinated with Theatre Arts department for scripting, performance, recording and post production of story content.

Android Software Engineer. Downstream LLC, Portland, OR. 2010. Developed prototype of large scale, multi touch, multi screen, multi app Android installation for a major cell phone company using Android OS, Android-x86, Windows 7, Visual C++, Linux (Ubuntu & Fedora), OSX, iOS, Eclipse, Android SDK, ADT, Java and command line tools, Ant, Git, Subversion, Open Frameworks OpenGL/C++ API, Parallels Desktop VM for Mac, Windows and Linux, VNC (several open source code bases). Rapid development schedule required evaluating the various major system components (Android, VNC, IPC mechanisms) for compatibility and adapting quickly when problems or show stoppers were identified, e.g. Android-x86 won't run on AMD machines, Android VNC server binary on SourceForge was for ARM CPU and wouldn't run on Android-x86, rooting DroidX handset triggered automatic update of OS to install new version which blocked the root exploit. 5 week development period resulted in functional proof of concept deliverable to be evaluated by customer. Software stack was as follows: Android App running on Android-x86 which ran inside Parallels on OSX. Used OSX screen sharing as VNC server/source, with VNC client/receiver on Windows 7 which used Ultra-VNC SourceForge distribution since Ultra-VNC was the best performing and fullest featured VNC client/server binaries available (evaluated 4 VNC flavors). Adapted the framebuffer and event handling code in Ultra-VNC to extract visual data, and communicate pixels and events via shared memory to OpenFrameworks C++/OpenGL custom application that mimics a desktop environment with "windows" which display pixels from VNC and

collect user touch events to send back to Android-x86/Parallels/OSX stack. OpenGL "window" objects in OpenFrameworks capable of moving/scaling based on user touch events handled inside OpenFrameworks. User touch events inside OpenGL "windows" are sent to Android-x86 stack on the Mac for interacting with the Android app running inside the Android-x86 instance. Download of APK files from Android Market and other www sources often did not recognize Android-x86 as a valid Android instance, so downloaded some apps onto DroidX, then sideloaded, using Linux/Eclipse/ADT, onto USB stick that acted as an SD card which then plugged into the Mac, redirecting to Parallels for use by the Android-x86 instance.

Software Engineer/Business Developer. TinMap LLC, Ashland, OR. 2009 - 2010. Developed software for measuring and treating tinnitus on iPhone platform. Business planning, pitching, management. NIH grant development.

Senior Software Engineer. UC Santa Cruz UARC, NASA Ames Research Center, Moffett Field, CA. 2008 - 2009

Developed new features and maintained existing code in Java, C and JNI for Air Traffic Management research project with large code base (300K+ lines Java, 150K+ lines C/JNI, 1200+ Java files, 800+ C/JNI files). Implemented new visual, GUI and data handling features for GRIB2/RUC, NOWRAD and NCWF6 weather data products. This included using Java2D features such as layering, antialiasing, sub pixel line width and alpha blending to allow visualizing multiple weather data products simultaneously, and to allow user choice of which data set to emphasize in an easy, intuitive manner. This also let users create highly enhanced images of the weather with air traffic data for use in print publications such as journal papers. Extensive GUI development, enhancement and maintenance using Swing GUI toolkit, from basic widgets up to complex JTables with dynamic updating as data is loaded or unloaded in the runtime application. Synchronization of GUI elements across multiple windows, frames, panels etc. Thread safe synchronization of GUI and data I/O. Extensive use of Eclipse, GDB, Subversion and Clearcase.

Senior Software Engineer. Venture AdAstra, Wilsonville, OR. 2008

Designed and coded GUI tools in Matlab for QA and Validation of advanced algorithms and simulator for basic/applied research project, which uses statistical analysis of GPS satellite signals to improve position and timing information by 1 to 3 orders of magnitude. Developed workflow for QA and Validation. Tested C++ utilities for embedded custom hardware communication with Windows and Linux hosts. Mentored junior engineers.

Software Engineer, Research Scientist, and Consultant. tlafox, Ashland, OR. 2003 - 2008

Conducted original, innovative research in computer analysis of music and rhythm. Wrote grant and research proposals and reports. Developed software using Objective-C, Cocoa, MATLAB and Java. Published research articles. Curriculum design and development. Advisories and tutorials on computer graphics and programming. Various commercial and academic jobs during graduate school.

Flight Simulator Development Engineer. NASA Ames Research Center, Moffett Field, CA. 1995 - 2003

Principal software engineer of real time graphic simulators for flight controls research. Job tasks included:

- * Development and maintenance of 3D graphics runtime code using c/c++, OpenGL Performer.
- * Specification, installation and maintenance of SGI and linux computer systems, high end display systems, video and support equipment.
- * Developed and integrated 3D models of aircraft, terrain, airports, clouds and other visual elements.
- * Utility code to support the simulator with unix scripting, TCL/TK/expect.
- * Production of video and still images from realtime sim for NASA PR, briefings and reports.
- * Sound effects development.
- * Demonstrations and briefings for wide range of personnel, including NASA Administrator, Aerospace Executives, Military Officers, USA & Foreign Dignitaries, TV documentaries.

* Job titles: Computer Scientist, NeuroGraphic Engineer, System Analyst IV.

Intelligent Flight Control was on an ongoing NASA research project. Employed by several subcontractors, not a government employee. All milestones finished on or ahead of schedule to the satisfaction of NASA.

Awards and recognition for the project:

- * 1998: NASA Group Technical Achievement Award
- * 1999: Discover 100 finalist

Software Tester. Netscape Communications Corp, Mountain View, CA. 1994 - 1995.

Tested new internet browser product for bug identification and tracking.

Technical Support Staff. Industrial Light and Magic, San Raphael, CA. 1994.

Data management and support for special effects production house.

Embedded Audio System Designer. Digital Audio Prototypes. 1993.

Design/prototype digital audio feedback system for a startup. Used PIC micro-controller, Analog Devices 16 bit A/D-D/A chip, Atari ST 1040 and embedded FORTH.

Engineering Staff. Silicon Composers, Palo Alto, CA. 1992.

Managed production for high performance embedded computer hardware and software products. Wrote technical manuals and documentation. Designed test procedures for hardware and software. Designed printed circuit boards.

Software Engineer. IMCS Corp, Santa Clara, CA. 1990 - 1992.

Designed, coded and supported UI and control software for automated IC tester. Provide customer support.

Electronic Technician. Tektronix, Beaverton, OR. 1988 - 1989.

* Testing, calibration, troubleshooting and repair of circuit boards for TV studio monitor model 650.

* Built, packaged, and documented digital and analog circuitry for plasma flat panel R & D project.

Assistant Radio Engineer and Air Host. KRBD-FM, Ketchikan, AK. 1987.

Assisted chief engineer in maintenance of radio station. Produce spots and record NPR feeds for on-air rebroadcast. Host live music shows. Check air tapes and manage weekly rotation.

Stage Manager and Assistant Technical Director. Naa-Kahidi Theatre, Ketchikan, AK. 1987.

Built show and managed daily operation for summer production of Native American Theatre. Recorded audio for 16mm film production of the play. Installed and maintained computerized lighting control system.

Assistant Radio Engineer and Air Host. KBOO-FM, Portland, OR. 1986 - 1989.

Similar to KRBD gig. Also helped build high quality audio production studio. Produced a weekly show with summer high school students, mostly original comedy by the kids. Included lots of studio production and field recordings. Trained students in radio and audio production technique, and broadcast writing.

Circuit Board Design Verification Engineer. CircuitPac, Beaverton, OR. 1985 - 1988.

Electronic Technician. Western Transportation, Portland, OR. 1986 - 1987.

Education:

2006 Southern Oregon University. Ashland, OR. MS Mathematics and Computer Science.

Thesis: Rhythm Analyzer, a Technical Look at Swing Rhythm in Music.

Math coursework: Numerical Analysis, Differential Equations, Partial Differential Equations,

Optimization, Complex Analysis. Wrote numerical methods code in MATLAB for

differential equations including Adams-Bashforth and Runge-Kutte. Wrote MATLAB

code for spectral analysis and feature extraction for thesis research in music analysis

of micro-timing in rhythm. Gave guest lectures to undergraduate math classes in

Fourier analysis, numerical methods, and optimization (RK4, Simplex method, neural nets).

2004 Southern Oregon University. Ashland, OR. BS Computer Science.

Award: Distinguished Student Researcher of the Year, SOU School of Sciences.

Other education:

UC Santa Cruz Extension.

3D graphics, and c++ object oriented programming.

Foothill College. Los Altos, CA.

3D graphics, c/c++ programming, 3D modeling/animation.

SOSC. Ashland, OR.

Theatre technology, Computer science, Radio production.

Reed College, Portland, OR.

Math/Physics and Theatre/Dance.

High School

International School, Bangkok Thailand.

Professional Training:

2004 Regumed Institute, Germany. Electromagnetic bioresonant therapy principles and practice.

2001 Maya API conference.

2000 ISO 9000/9001 certification training, NASA Ames Research Center.

2000 Alias/Wavefront Global Users Association (AWGUA) conference.

2000 Multigen, Inc. Realtime 3D modeling.

1998 Silicon Graphics. IRIX system administration. Realtime 3D graphics programming with OpenGL

Performer.

Publications:

A Technical Look at Swing Rhythm in Music. Journal of the Acoustical Society of America, November 2006.

The Science of Ray Charles' Swing. Discover Magazine, April 2007 (news feature. author: Dave Mosher).

More Than a Feeling: Technical Analysis of Swing Music. Acoustics Today, July 2007.

Pulse and Swing: Quantitative Analysis of Hierarchical Structure in Swing Rhythm. Journal of the Acoustical Society of America, November 2007.

Software:

- * 3D/GUI graphics: OpenGL, OpenGL ES, JOGL (Java OpenGL), Java2D, Quartz2D.
- * Programming languages: C, C++, Objective-C, C#, XAML, MATLAB, Java, assembler.
- * Operating systems: Macintosh OSX, Windows 7, Windows Phone 7, iOS, unix, linux, Android and Androidx86, Windows 7 and XP, IRIX. Multiboot OSX, Android and Windows on Mac OSX with Bootcamp & Parallels.
- * Developer tools: Xcode, Interface Builder, Visual Studio 2010, Expression Blend, Eclipse, IntelliJ, Subversion, Git, SourceForge, GitHub, Co-Human, Clearcase, Bugzilla, ClearQuest, Ant, make
- * 3D modeling/animation: Maya, Multigen, Softimage.

Volunteer Experience:

- * Exploratorium, San Francisco, CA.
- * Oregon Museum of Science and Industry (OMSI), Portland, OR.
- * Katog Choling Buddhist Center, Ashland, OR.
- * ScienceWorks Hands-on Museum, Ashland, OR.