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|  | Jay Alan Borseth  2419 E Helen St Seattle, WA USA 98112 [jaybo@nomadelectronics.com](mailto:jaybo@nomadelectronics.com) @jayborseth (206) 931-5138 | | |
| Summary | Accomplished software developer, system architect, technical lead, and project manager in the areas of video, image processing, scientific instrumentation, and visualization.   Over 20 years software and 9 years computer hardware design experience. | | |
| Areas of Expertise | Extensive experience in developing applications, system services, and drivers for Microsoft Windows, Windows Phone, Silverlight, WPF, and Windows Mobile.  Working first in hardware design and later in software, I have had primary responsibility for a number of innovative, commercially successful products. A general thread throughout my career has been the integration of video and computer graphics.  While working at Microsoft I was the primary author of the video capture interface for Microsoft Windows which has arguably spawned the largest corpus of digital content anywhere on the web: streamed and captured video. | | |
| Keywords | Microsoft Windows, Windows Phone, C#, C/C++, Python, javascript, XAML, Silverlight, Blend, AWS, Azure, MVVM, WPF, ASP.NET, WDM, VFW, DirectShow, video, capture, image processing, image analysis, machine learning, MPEG. | | |
| Products | Nautical Charts  Displays real time animated tides and currents overlaid on NOAA nautical charts using Silverlight. Ported to WP7/8. See: http://www.deepzoom.com.  Pocket Stars  Star chart, star finder, ephemeris, and celestial navigation calculator for the Windows Mobile Pocket PC, Smartphone and Windows desktop. Winner of multiple awards in the Best Education Application and Best Astronomy Application categories. Over 300K downloads.  See: http://www.nomadelectronics.com. | | |
|  | Microsoft Windows Video Capture  Primary architect at Microsoft for the WDM video capture model, which is integral to all versions of Microsoft Windows since Win98. This core system infrastructure is to capture, stream, and route video, tune broadcast signals, and control conferencing cameras. The technology is used by capture applications such as Skype, Premiere, NetMeeting, Windows Messenger, Flash, Media Center, and virtually every other product which captures live video and integrates television functionality into Windows. | | |
|  | Optimas  One of two primary authors of a Windows based image processing, analysis, measurement, and visualization toolbox and application generator for biomedical and industrial applications. $4K / seat. Sold to Media Cybernetics and integrated into ImagePro. | | |
|  | SnapShot  One of the earliest video image capture and enhancement programs for desktop publishing under Windows. Licensed to Aldus Corporation (ultimately Adobe). | | |
|  | Color Sonar  Hardware and software design of world's first commercial color video scanning sonar. | | |
| Experience | DeepZoom LLC Seattle, WA | | 2010 - present |
|  | Owner. Representative projects include:   |  |  | | --- | --- | | 2013 - 2014 | Allen Institute for Brain Science. Designed next generation visual stimulus platform. Contributed warping code to open source Python project PsychoPy. | | 2010-2011 | DeepZoom.com website for viewing NOAA nautical charts and animated tides and currents. Also ported to WP7/8 using the same code base. Azure data storage. Animated worldwide wind patterns. See [www.deepzoom.com](http://www.deepzoom.com) | | | |
|  | Nomad Electronics Seattle, WA | | 2000 - present |
|  | Owner. Representative projects include:   |  |  | | --- | --- | | 2012 | Simulab Corporation. WPF application for endoscopic surgical training. MP4 video capture, force/rotation/position sensors with uploads to Amazon S3. Python data analysis scripts. | | 2010-2011 | Informative Graphics Corporation. Silverlight 4 and WP7 document viewer using DeepZoom with search term highlighting. | | 2009 | AuthenTec Corporation. Developed first Win7 biometric fingerprint driver onsite at Microsoft. | | 2008 | Video metadata editor for Microsoft Research written in WPF. | | 2004 | DirectShow training for Siemens and other companies. | | 2001-2010 | Pocket Stars, self-published, award winning PocketPC, Smartphone, and PC astronomy application. See [www.nomadelectronics.com](http://www.nomadelectronics.com) | | | |
|  | Microsoft Corporation Redmond , WA | | 1992 - 2000 |
|  | Primary architect of the video capture and television infrastructure in the Microsoft Windows Operating Systems. This work has spanned two generations of development: VFW introduced in 1992, and WDM introduced in 1998. In both cases this involved design and implementation of the driver and streaming model, as well as the user mode infrastructure used by applications to acquire video for editing, conferencing, television tuning, and image processing.  The WDM model is the successor to VFW and is available on Win98 through Win8. This technology is used by Media Center and virtually all Windows video capture and telepresence applications. WDM video capture includes worldwide tuning for broadcast television, support for 1394 and USB cameras, PCI and videoport capture hardware, and is fully integrated with the DirectShow environment.  In addition to writing a number of sample and production drivers for both VFW and WDM, I am primary author of Vidcap, AVICap, and a number of DirectShow filters for television tuning, video routing, MPEG transport stream analysis, and VBI and audio software oscilloscopes. While focusing on product design and implementation, I have also acted as a technical lead for other developers, given numerous technical seminars at venues such as Meltdown and WinHec, and provided significant outreach and support to the hundreds of IHVs and ISVs developing drivers and applications for both capture models. My design, development and debugging skills span user and kernel mode. I am particularly strong in the areas of C/C++ programming, WDM drivers using the Stream Class, Kernel Streaming, and DirectShow, video, television, and MPEG. | | |
|  | BioScan,Inc Edmonds , WA | 1987 - 1991 | |
|  | One of two primary authors of OPTIMAS, once the leading Microsoft Windows image processing application. OPTIMAS is both an imaging toolbox, and a graphical application generator for scientific and industrial image processing and analysis applications. Primary responsibility for the following: user interface, image processing, image arithmetic, object detection and measurement, TIFF, FFTs , custom dialogs, DDE, image printing, installation, macro recording. MediaCybernetics and Aldus/Adobe ultimately purchased this technology. | | |
|  | BioSonics, Inc Seattle , WA | 1986 - 1987 | |
|  | Designed OPRS (Optical Pattern Recognition System) for video image analysis in fisheries research. | | |
|  | Telematic Products, Inc Redmond , WA | 1983 - 1985 | |
|  | Hardware design of peripheral controllers and interfaces to Bell switching equipment to record telephone billing information and RAM/ROM memory board for NEC PC. | | |
|  | Western Marine Electronics Seattle , WA | 1980 - 1982 | |
|  | Senior Sonar Engineer. Designed worlds' first commercial scanning sonar utilizing color graphic video display for navigation, fishing, and security applications. Total product responsibility: Z80 uP design, color video display, switching power supply, PCB layout, and assembly control program. This product family had a lifespan of 8 years and a retail value of over $25 million. Travelled throughout Asia and Oceania for 7 months giving demonstrations and seminars. | | |
|  | University of Washington, Dept. of Physiology | 1979 - 1980 | |
|  | Designed analog instrumentation and Fortran computer interfaces for electro physiological experiments in neural activity. Designed video display for of a cardiovascular Doppler ultrasound. | | |
|  | Strobe Data, Inc Bellevue , WA | 1977 - 1979 | |
|  | Hardware design of a wide variety of Data General Nova and 8085 interfaces: floppy disk, RS 232/432, A/D converters, and a video weather data system for the FAA. | | |
| Patents | **Worldwide television tuning system with country code based tuning.** United States 7,042,526 Issued May 9, 2006 | | |
|  | **Worldwide television tuning system with object-based tuning control modules.** United States 6,340,997 Issued January 22, 2002 | | |
|  | **Modularization of broadcast receiver driver components.** United States 6,901,453 Issued May 31, 2005 | | |
|  | **Extensible framework for tuning to programming sources** United States 6,340,997 Issued Sept 30, 2003 | | |
|  | **Worldwide television tuning system with object-based tuning control modules.** European EP1256231 (WO0161992) Issued November 13, 2002 | | |
| Education | **The Evergreen State College Olympia, WA BS, 1977** Electronics, computer programming, acoustics, and chemistry. | | |
|  | **Cornish Institute of Allied Arts Seattle, WA** Life drawing, animation, photography, ceramics. | | |