

Steven Leach  
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Substantial experience programming multi-treaded Windows NT/2k/XP applications using the C++/CLI, Win32 API, MFC, ADO, OpenGL, DirectX and wxWindows. Familiar with most of the Microsoft Foundation Classes associated with Visual C++ version 6.0, 2003, 2005 and have implemented COM container and client applets. Proficient or expert utilizing image processing algorithms, including kernel convolutions, the use of LUTs, JPEG 2000, and the use of the various Microsoft Imaging SDK's. That coupled with my knowledge of real time video capture should make it very easy to quickly accomplish any task you wish of me. Expert software engineer with DICOM modalities XA, US, Dictation, and bi-plane XA. Intimate knowledge of various image processing techniques including 3D, quaternion knowledge, iso-contouring, and tomographic calculations.

#### Technical Profile

Expert in image algorithms especially kernel convolutions, LUT transformations, nonlinear filtering, shearing, and object recognition. 3D image manipulations with quaternions, matrix operations, and real time video. Intimate knowledge of Windows C++/CLI, Win32 API MFC, CDatabase, CRecordset, as well as document view architecture. Intimate knowledge of Mutxes, Semaphores, and Critical Sections and their proper use in multi-threaded Windows applications. Expert use of DICOM part 10, presentation LUT's, Modality Worklist query, SCP and SCU implementations, using DCMTK, and proprietary toolkits. Accomplished with version control tools such as SourceSafe, Subversion, Tlib. Accomplished with open source tools such as RoboDoc, Doxygen, and FireBird, and Source Navigator.

#### PROFESSIONAL EXPERIENCE

##### **Axsys Technologies**

**10/2007 to Present**

Software Engineer

Optimize a C++/CLI application using Studio 2005 to provide real time graphics, interaction through serial communication with a Texas Instrument DSP on an actively stabilized camera system. Used multi-threading to provide real time graphics update.

##### **EiGEN Medical LLC**

**04/2007 to 10/2007**

Software Engineer

Develop code for conversion of proprietary RAW format to MPEG 2 using the Intel Performance Primitives. Created new DICOM and image processing classes associated with DCMTK, and Intel Performance Primitives, used by several neophyte scientists.

**North American Imaging****08/2005 to 02/2007**

Software Engineer

Developed and automated InstallShield setup creation and uninstallation or trial ware version of software OEM'd to Fuji and sold directly to customers.

Used C++ , wxWindows, and the WIN32 API to develop DICOM SCP software to accept print jobs from multiple DICOM devices. Each network connection took place in a separate thread.

Used C++, and Win32API to develop software to print these DICOM print jobs on standard Windows Printers with decision making so that grayscale prints went to one printer and color prints to another separate printer. Each print job was queued into STL fifo stacks and was handled by a separate thread as well.

Developed software to implement localhost TCP/IP interprocess communication.

Reverse engineered an RS-232 interface for a SONY VCR recorder, and wrote software to emulate the interface on a piece of equipment, so the NAI MDR Video could replace the SONY VCR.

**EiGEN Medical LLC****06/2004 to 08/2005**

Principal Software Engineer

Used C++, ATL, Win32API, OpenGL and DirectX to create a multi-threaded Digital Subtraction Angiography product line that is currently being sold. This provides up to 15 fps 1024 x 1024 image subtraction using a Matrox framegrabber board, with storage to hard disk.

Corrected the DICOM implementation of several products including the Digital Fluoro Loop that acquires images from 512 x 512 to 1024 x 1024 at 30 fps and uses the C-STORE protocol to send the DICOM Packages to the PACS system.

All products provide for real time display and immediate playback as well as user selected runs to playback.

Created algorithms for Digital Subtraction Angiography using a specialized video grabber board. Added Modality Worklist capability to several of the EiGEN products. Created Networking and DICOM sending software for the bi-Plane Digital Fluoro Loop, thus creating an entirely new product line.

**Zeta Development Laboratories****04/2002 to 06/2004**

Software Development Manager

Used C++, Win32 API, Open GL, MFC, COM, and DirectX to create an application that was hardware independent. Chose the open source database engine, and open source graphics and imaging libraries to develop an entirely new ophthalmic image capture software. This application captured from 6 different camera systems using CamLink, GigE, frame grabber and proprietary interfaces. With the help of contract consultants specified and developed a completely new image review software, all graphics rendering used OpenGL. Utilizing XML embedded into the PNG images the review software is able to track each and every image and any and all manipulations performed on the images. Further developed automated archival and cleanup software that run as services. This suite of software was then tied to a web based analysis software package called Ocunet.

## **Ophthalmic Imaging Systems**

**04/1997 to 04/2002**

Principal Software Engineer

Converted their entire 16 Bit Windows 3.x program consisting of 185 modules to Windows NT. This application used Windows C++ with MFC, Win32API and COM to provide database independence. This was accomplished in approximately 4 months. This application used no less than 5 separate threads with pipes for communication. Added DICOM compliant file saving and SCU and SCP functionality using the DAVIS DICOM communications toolkit. The NT product was the current deliverable for all new systems. The product acquires images from a CCD color or grayscale camera using several different frame grabber boards at a rate of 1 frame/second. Instituted a program structure that allows the use of other imagegrabber boards and camera combinations with no change in the main application. This has been shipping so that we can utilize 12 bit gray scale systems for our high end customers, while the low end cameras are also supported by the same application. I added DICOM capability using the Leadtools toolkit, and DCMTK and DICOM Structured Query/Response capability to satisfy the Veterans Administration requirements for interoperability. The images are used by ophthalmologists to diagnose retinal and corneal problems.

I created several COM classes to provide 3<sup>rd</sup> parties access to our database.

## **EiGEN Medical**

**04/1994 to 04/1997**

Senior Software Engineer

The 3 member software engineering team used Visual C++ with the MFC classes and Borland C++ 5.1 to develop X-Ray archival software in the NT operating system. The software is highly user oriented, extremely usable to the degree that no manuals are ever consulted with this product. The last project required making an NT PC acts as a SCSI target device so that a proprietary hardware device could transmit information to the NT box which then acts as the server for a medical intranet. Helped developed an intranet utilizing HTML and CGI code. While no JAVA code was used in this product I have written several classes for my own amusement and have used our intranet to be sure that they work as intended. That way the current proprietary hardware can be utilized in an open system.

Wrote several RS232 interface modules to allow the EiGEN specialized control panel to be used in place of a mouse and allow the special "menu" and "keep" keys on their interface box to act the way to access the menu and navigate within the menu.

Thoroughly familiar with the use of sockets and the MFC classes that allow streaming over the NT and Windows 95/98 networking. Wrote software that converts EiGEN proprietary optical disk format into a corresponding CD-ROM format so EiGEN images would conform to the DICOM 3.0 standard. Along the way developed several special drivers to attach specialized EiGEN equipment to the NT operating system.

## **Photon Inc.**

**06/1992 to 04/1994**

Senior Software Engineer

The chief architect and implementor of the MS Windows products for this company that develops LASER measurement systems for use by Xerox, NCR, IBM and many other

well known companies. This software was developed using Borland C++ and the Object Window Libraries. While the heart of the software is the DLL to receive data from the Photon interface card my pride in the project is the impressive multivariate interface which allowed the user to view this information in a myriad of ways simultaneously and to save the current settings as a specialized file so other users would not be disturbed when the options and window placement were changed. This software development effort yielded 3 products that are superior in speed and flexibility to the previous offerings of the company. The software is device independent through the use of DLL's to provide all the machine interface and provides for such sophisticated graphics as 3D constructions, 2D contours and mathematical fitting of nonlinear functions at such rapid rates that the user may have all views going simultaneously and still maintain a refresh rate that was as fast as the sensor could provide.

**Luxtron Corp. / XINIX**

**06/1989 to 06/1992**

Software Manager

The Endpoint Controllers and Particle Sensors developed by LUXTRON/XINIX are the most sensitive and sophisticated controllers in use for the manufacture of Integrated Circuits. Special features include multiple sensor capability, specialized noise rejection, user programmable interfaces, and sophisticated trend charting capabilities.

RESPONSIBILITIES: Develop generalized software tools, specialized noise filtering algorithms, develop new machine-machine interfaces and maintain the older software versions. Direct and guide the porting of the software systems from Microsoft to Borland C++, and enhance the capabilities of several already existing software packages. I hired 4 software engineers and directed the efforts of more than 3 contract software engineers. To complete up to 5 software tasks simultaneously, on schedule.

Patents:

5,208,644 ; Interference Removal

5,138,149; Apparatus and Method for Monitoring Radiant

Energy Signal with Variable Signal Gain and Resolution Enhancement

5,190,614; Method of Endpoint Detection and Structure Thereof

**SRI International**

**09/1977 to 02/1989**

Electrochemical Engineer

Awards: Received 2 Exceptional Achievement awards for software data analysis packages.

Only person to receive 2 achievement awards.

RESPONSIBILITIES: Coordinate the efforts of several research technicians, develop automated testing procedures using Macintosh and 80x86 PC's .

ACCOMPLISHMENTS: Developed interface electronics and wrote software for the Macintosh to allow automatic testing of various sensor technologies. This software and electronics package has subsequently been sold by myself to 5 universities and research facilities. Specified and Developed Software Package to interface to KEVEX EDAX with

scanning capability to allow 2 dimensional elemental X-Ray Fluorescence data to be acquired and viewed using a Macintosh II. The system was written using Aztec C and allowed background subtraction, contour plotting, iso-elemental plots and of course such modern visualization techniques as edge detection, shading of various concentration ranges, and slicing of 2 dimensional information into single dimensional plots.

Used LabView to acquire data from various experiments using GPIB, RS232, and Proprietary interfaces.

Developed interface electronics and wrote software for the Macintosh to acquire data from X-ray diffractometer. The software to analyze that acquired data to extract critical cell parameters was also written by myself. For this effort I received an exceptional achievement award.

Developed complete experimental apparatus and sensors to test samples for corrosivity in various solutions. In order to monitor the long term experiment (7 Months) I programmed the Macintosh to acquire data from several IEEE-488 instruments. The data was then later analyzed, graphed and correlated using MS EXCEL, as well as my own graphing routines which were used because they graphed the data in 1/10 the time.

Patents: 4,609,440 Electrochemical Synthesis of CH<sub>4</sub> from CO<sub>2</sub>

4,609,441 Electrochemical Reduction of aqueous Carbon dioxide to methanol.

#### EDUCATION:

M.S. Chemical Engineering, Stanford University, Stanford CA. GPA 3.5 of 4.0

B.S. Chemical Engineering, Univ. of Calif. Davis, CA. GPA 2.7 of 4.0

Published papers on the subjects of Electrochemistry, Silicon Solar Cells, mathematical analysis of images in the Journal of Electrochemical Society, and presented papers at some conferences.