Resumé

Jim Serwer

Software Consultant

408-985-6615

Send email

Preface: This resumé was originally designed as a web site, not a traditional resumé. It is quite long and is best read online; then one can follow links in any order. Towards the end there is list of projects in reverse chronological order, similar to a traditional resumé. You cannot send me email from this document like you can from the web site. The original version of this resumé is at www.JimSerwer.com/resume.

Links do not work in the Acrobat PDF version, even though they are highlighted as if they did. It is best to use bookmarks to navigate the PDF version. In Acrobat Reader or Acrobat Exchange, press the second icon from the left on the toolbar. Alternately, you can pull down the View menu and select "Bookmarks and Page." A list of all bookmarks should appear in a panel on the left. Click a bookmark to jump to the desired page.

I am a software developer who works as an independent contractor. If you are in need of software consulting services please read my General Introduction first, and then skip to any topic that interest you.

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Education

1971	**MBA**	**Finance**	**University of Michigan**
1968		**Mathematical Statistics**	**Wayne State University**
1965	**M.S.**	**Mathematics**	**University of Chicago**
1963	**B.S.**	**Physics**	**University of Chicago**

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Resumé:
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Introduction to Resumé

I, Jim Serwer, am a software developer with over 30 years experience in a wide variety of computers and disciplines. Since 1993, most work has been for Microsoft Windows.

I work in Silicon Valley, the general San Jose, California area. But I am not limited to Silicon Valley. I have worked on projects for East-Coast clients, communicating by telephone and email.

Many of the projects on which I have worked are very different from one another. So different that one may wonder what I call my specialty, or even if I have a specialty. I see my specialty as problem solving, getting programs to work. It matters little to me whether the problem requires a particular language, operating system or discipline. Solving a problem can, and often does, entailed all of the following activities.

- Web and Usenet information searches.
- Posting questions to web help sites.
- Asking advice at user-group meetings.
- Examining bits in hexadecimal dumps.
- Finding the reason an API call fails by tracing disassembled machine code through an operating system.
- Traditional use of debuggers including SoftICE, BoundsChecker, and Visual Studio.
- Debugging writes.
- Getting through to the right technical-support person
- Et cetera.

Emails to technical support can be as much a part of programming as writing code and sniffing communications data.

Whether I am working on a device driver, or a Visual Basic application, my goal is to make the program work correctly. Having said that, most of my recent experience has been with Microsoft Windows, plus a heathy dose of embedded work.

I do not charge for learning time when the subject matter is of a general nature.

This web resume is divided into a number of pages. Each page covers a different topic. One web page toward the end of this resume is a list of contracts in reverse chronological order, similar to a conventional resumé. At the bottom of each page are links to the other pages. Please visit any pages that interest you. If you find anything at this web site confusing or inconvenient to navigate, please let me know by email.

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Computer Languages

I have experience with the following list of computer languages.

C and C++

C and C++ have been my primary languages since 1983. All projects in this resumé were done in C or C++ unless specifically stated otherwise.

Visual Basic

I have done many large projects in Visual Basic. Most use Visual Basic for user interface and a companion DLL for lower-level computation.

Assembler

I began my career as an assembly language programmer long before C was invented. Over the years, I have learned the assembly languages of eight different architectures. I can mix C/C++ and 80x86 assembler code with ease. I find bugs that can be found only by tracing the disassembled machine code.

I have also written assembly code for embedded applications using the Intel 8051 and the Motorola 68331.

Perl

All scripts for my web site are written in Perl. My web site includes SignetSure which offers a shareware product. Perl scripts include logging customer registrations, accepting feedback messages, and communications with the credit-card authorization service.

ADO

My most recent contract required that results be saved in a local Access database when network communications fails. I implemented this using Visual Basic and ADO (ActiveX® Data Objects).

Javascript

My web site includes some occasional Javascript. While my total Javascript experience is short, it took only three days to both learn the language and get my first scripts working.

Java

I passed the Java Certification Exam on the first try. Wrote a debug tool that translates a Java serialization file to a formatted dump.

HTML

I created this web site (both Resumé and SignetSure) using Allaire's HomeSite HTML editor.

Other

I often learn a new language in just a few days and never charge my client for the learning time. For example, as soon as there is an occasion to learn XML or a new assembly language, I will do so and charge my client nothing.

MFC

I do not feel like I have ever used MFC, I only feel like I have fought with MFC. These bouts have made me an MFC expert. I would be delighted to fix your MFC problems in legacy programs. I'll disqualify myself from undertaking new MFC projects.

(My SignetSure product includes Tabs, Drop-down list boxes, dialog boxes, string manipulation, et cetera, all implemented in C/C++ without benefit of MFC.)

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Internet Communications

WinSock

A client company wanted to push-publish magazine articles to subscribers. I wrote a background program for the subscriber's computer. This periodically polled the server for new articles and managed background file download while the subscriber read his email. I also wrote the server side download program. All these internet communications were done using WinSock.

TDI Driver

The Transport Device Interface (TDI) is a Microsoft protocol by which a TDI client (e.g. WinSock, NetBIOS) talks to transport device drivers (e.g. TCP/IP).

I have written TDI Device Drivers, for both Windows 95/98, and Windows NT. These drivers insert themselves into the TCP/IP stack at the TDI level. They examine all incoming TCP/IP data and divert certain kinds of inputs to a companion application program. This is similar to the technology used in personal firewalls and internet filters.

WinInet

WinInet.dll is a component of Win32; it performs HTTP, FTP, and Gopher protocol functions. My SignetSure web site has the ability to act as a client (browser) and initiate a session with the web server of the credit-card authorization service. I implemented this using the HTTP functions in WinInet.

FTP

An equipment monitoring program needed to receive diagnostic data files from many remote locations. The monitoring program was written in Visual Basic. Data files were sent over FTP protocol. I wrote a Visual Basic program that used a communications custom control to do FTP listening and receiving.

I have never programmed FTP using WinSock or WinInet. And I am confident I can do either when the need arises.

Other Web Technologies

(With each new contract, I learn new material. Some material is unique to the client's product, and some is of a general nature. It is my firm policy NOT to charge my clients for time I spend learning skills of a general nature.)

Internet communications entails other technologies besides WinSock, TDI, and WinInet. I do not charge for my time to learn additional communications technologies. If a project requires me to learn WAP (Wireless Application Protocol), it may cost me more, but it should not cost you more.

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Device Drivers

I have worked on three device drivers for Windows, two TDI drivers and one printer driver.

TDI Drivers

The Transport Device Interface (TDI) is a Microsoft protocol by which a TDI client (e.g. WinSock, NetBIOS) talks to network transport device drivers (e.g. TCP/IP).

I have written two TDI Device Drivers, one a VxD for Windows 95/98, and the second a Windows NT Device Driver. These two drivers adhere to very different architectures. But both insert themselves into the TCP/IP stack at the TDI level. These drivers examine all incoming TCP/IP data and copy certain kinds of inputs to a companion application. This is similar to the technology used in personal firewalls and internet filters.

Printer Driver

Gradco Inc. made a printer accelerator card for the PC bus. A Windows 3.1 printer driver translated standard Windows print commands into the protocol of this card. In 1993 I debugged and improved their existing printer driver. This driver subsequently worked on Windows 95 also.

Driver Development Tools

I am a licensed user of NuMega's DriverStudio. This is a suite of seven different driver development tools for Windows 95/98 and Windows NT. From among these tools, I used VTOOLSD, SoftICE, and BoundsChecker Driver Edition while developing the TDI drivers.

Other types of drivers

(With each new contract, I learn new material. Some material is unique to the client's product, and some is of a general nature. It is my firm policy NOT to charge my clients for time I spend learning skills of a general nature.)

Device Drivers include a wide range of different specialties and different device types. I do not charge for my time to learn new devices. If a project requires me to learn about Infrared devices, it may cost me more, but it should not cost you more.

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Web Site Development

My web development skill is programming using such tools as Perl and Javascript. (I am not a content designer.)

I have developed two web sites, www.SignetSure.com, and www.JimSerwer.com/resume. (Both at the same IP address.) My web sites experience includes the following.

HTML

My HTML Editor is Allaire's HomeSite. The goal of my web site design is fast download and easy navigation. If you find any part of this web site inconvenient to navigate, please send me email.

I deliberately keep this web site simple. It targets the lowest-common-denominator browser. No need to download special multimedia tools. No frames and no style sheets. People have complimented my web site for its ease of navigation, not for its complexity nor sophistication.

Perl

Many Perl scripts are behind my web pages. If you send me email, you submit your message to a Perl script, and the Perl script sends the email. (This keeps my email address out of sight from spammers.) If you register SignetSure, Perl scripts record the transaction and email the registration certificate.

Javascript

When you register SignetSure, JavaScript checks input validity before sending the information to the credit-card authorization service.

When SignetSure was in beta test, testers needed a password to download the test version. This password was encrypted before it left the user's computer, and the encryption was keyed to the tester's IP address. This was done with client-side Javascript and server-side Perl.

WinInet

When someone registers my shareware product, SignetSure, a credit-card authorization service sends me notice that a transaction has been approved. I do further validity checking and need to notify the authorization service yea or nay. To do this, my web site acts as a client and initiates a browser session with the server at the authorization service. This process uses WinInet. (WinInet is the same DLL that Internet Explorer uses.)

No Cookies

It is possible to track a user from one web page to the next without the use of cookies. My web sites never leave a cookie and do not care if users have cookies turned off. When form input spans more than one page, I easily track the user's forms from one page to the next.

Other Web Technologies

(Each time I start a new contract, I learn new material. Some material is unique to the client's product, and some is of a general nature. It is my firm policy NOT to charge clients for time I spend learning skills of a general nature.)

Web site development can entail much more than just HTML, Perl, and Javascript. I do not charge for my time to learn additional web technologies. If I have to learn XML or PHP, it may cost me more, but it should not cost you more.

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Cryptography

RSA Public Key Algoritm

I am the creator of a cryptography tool called SignetSure. If Cryptography interests you, please visit the SignetSure web site and download SignetSure.

SignetSure is a developer tool which protects files from malicious alteration using digital signature technology. It provides a simple GUI for creating Public/Private keys and for signing files. A software developer can validate a signed file with a single API call. To validate a file, the recipient does not need to download PGP or even know that his files are being protected.

I wrote most SignetSure code myself; a few components I found on the Web. I found on the web an implementation of the SHA hash algorithm, and a package that performs long-number arithmetic. Then I modified the arithmetic package for speed.

After I failed to find any open source code which implements the RSA public key encryption algorithm, I implemented it myself. I implemented both the key generation and signing done at development time, and the redistributable validation library called at run time.

I coded from the mathematical proof of the RSA algorithm, without benefit of sample code.

Other Cryptography Algorithms

(Each time I start a new contract, I must learn new material. Some material is unique to the client's product, and some is of a general nature. It is my firm policy NOT to charge clients for time I spend learning skills of a general nature.)

Cryptography is a large topic that extends way beyond the RSA public key algorithm. I do not charge for my time to learn other crytographic algorithms. If I have to learn Triple DES (Data Encryption Standard), it may cost me more, but it should not cost you more.

Educational background

I have a masters degree in Mathematics and work experience in numerical analysis and scientific calculation.

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Embedded Firmware

I have had firmware experience with the following microprocessors.

Intel 8051

In 1997, I wrote prgrams to test a circuit board which handles communications to fiber-optics test equipment. Used 8051 assembler and C.

In 1987, I wrote programs to control a medical laser using 8051 assembly language.

In 1987, I wrote programs to network communication between a hand-held control module and medical imaging equipment using 8051 assembly language.

Motorola 68331 and HC16

In 1993, I wrote subprograms that were embedded in a digital audio mixer used by the television industry. Used Motorola 68331 and HC16 assembly languages and C. Programs included LCD display, a floppy loader, and user-input handlers. Coded software to control hardware chip select signals, watchdog timer, interval timer, serial communication, and the Intel 82077AA floppy microcontroller.

Intel 8086

In 1988, I wrote a special-purpose BIOS for a company's proprietary product using 8086 Assembly language. BIOS also included control of 8250 UART, 8254 Timer, and 8259 Interrupt controler. Extensively used Intel's I^2ICE.

Other embedded skills

(With each new contract, I learn new material. Some material is unique to the client's product, and some is of a general nature. It is my firm policy NOT to charge my clients for the time I spend learning skills of a general nature.)

Embedded firmware includes a wide range of different specialties for different microprocessors and microcontrollers. I do not charge for my time to learn new architechtures. If a project requires me to learn Lab View, it may cost me more, but it should not cost you more.

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Numerical Analysis and Scientific Programming

I have worked on the following projects related to Numerical Analysis and Scientific Programming.

TUTSIM

TUTSIM simulates an analog computer. It is a powerful tool for modeling continuous dynamic systems.

Much of my work on TUTSIM involved porting the user interface from MS-DOS to Windows. But I also did some important work on its numerical analysis component. I found and fixed several bugs in math algorithms. I added Fast Fourier Transforms. I added Bode plots of model output.

Calculator Simulator

In 1984 I wrote one of the first PC calculator simulators, called SlipStick, for MS Dos. SlipStick is the most mathematically advanced calculator I have ever seen.

In addition to all the standard functions for scientific calculators SlipStick has buttons to calculate Chi-Square, Complete Elliptic Integrals, Matrix inverse and determinant up to 5*5, Hyperbolic Functions, Gamma Function, Jacobian Elliptic Functions, vector operations, et cetera.

Random numbers can be uniform, normal, or poisson. SlipStick's random number generator passes randomness tests that the standard C library of its day fails.

SlipStick can find all the zeros of a ninth degree polynomial without a starting guess.

(SlipStick all fit in 128 KBytes before 640 KBytes became a standard feature on new PC's. The name "SlipStick" was chosen at a time when most people remembered slide rules.)

Engineering Support

In 1967 I was a support programmer for design engineers. One large project was a simulation of the XB70 Experimental Bomber. This required the simultaneous solution of about forty differential equations.

Cryptography

I have coded the RSA public-key encryption algorithm. This is used by my shareware product SignetSure. I could not find sample code, so I wrote my own programs starting from the number-theory proof of the algorithm.

Educational Background

I have a Bachelor of Science degree in Physics and a Master of Science degree in Mathematics, both from the University of Chicago. I also attended Wayne State University for one year taking graduate classes in Mathematical Statistics.

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Chronological List of Contracts

Here is a list of my contracts over the last ten years in reverse chronological order. (Dates are not exact as sometimes projects overlapped.)

09/01 to 12/01 Ciena Corporation, Cupertino, CA

> Ciena Corporation builds optical switches. Products are tested at stations which include a PC at each station. A database server keeps databases of part numbers, serial numbers, test procedures, and test results. I upgraded test programs running at the PC's to communicate with the database system. Made numerous other improvements and fixed bugs in test programs.
>
> Used Visual Basic and ADO.

01/01 to 06/01 Milpitas, CA

> (This company is not named, because its NDA of prevents disclosure of the existence of the contract.) This company has a large legacy program with multiple purposes and over 800 classes. Very few programmers at this company understand it. My job was to figure out what the program does and write a COM wrapper that encapsulates just the features needed by a new project.
>
> I succeeded in this task. Using Visual C++, I wrote a COM object that exposes the necessary functionality. As a byproduct, I wrote a Help file, over one megabyte in size, that documents the original program. I also wrote a Visual Basic program to test the various functions of the wrapper.

01/01 to 01/01 Clarinet Systems, Milpitas, CA

> Clarinet Systems makes infrared devices for connecting a Palm computer to a FTP network. I wrote a Visual Basic program to test the device.

02/00 to 12/00 SignetSure

> SignetSure is a developer tool which protects the files of a software publisher from

unauthorized modification. It uses the RSA Public Key encryption technology. The product supplies a simple GUI for creating public-private key pairs and for signing files. A program validates a file's signature in a single API call.

In the first six months that this program has been available, about two thousand people have downloaded SignetSure. (This does not count downloads from shareware sites that maintain their own copy of the product.)

I developed all aspects of SignetSure and its web site. I programmed the RSA encryption algorithm, I programmed the user interface, and I programmed the re-distributable library. I programmed the Perl scripts that handle online user registration. I also programmed a Perl-callable DLL that, using WinInet, that initiates a web session with the credit-card authorization service. This DLL acts like a browser and is the client to the remote web server.

05/99 to 02/00 Speedlane Inc., Palo Alto, CA

The Transport Device Interface (TDI) is a Microsoft protocol by which a TDI client (e.g. WinSock, NetBIOS) talks to network transport device drivers (e.g. TCP/IP). I wrote a TDI Device Driver (both VxD and NT versions) that inserts itself into the TCP/IP stack at the TDI level. This device driver examines all incoming network traffic and notifies a companion application of certain network traffic of interest. (This is similar to the technology used in personal firewalls and filters.)

12/98 to 03/00 ARI Network Services, Milwaukee, WI

Company sells Win32 software to equipment manufacturers to publish online parts catalogs to their distributors. Made improvements to an Acrobat plug-in and integrated it with their product. Numerous other feature enhancements and bug fixes.

07/98 to 08/98 SC Technology, Fremont, CA

SC Technology makes test equipment for chip manufacturers. This equipment needed PC software to collect test data and interpret the results.

I wrote various DLL's in C/C++ which were callable from Visual Basic. One DLL did RS-232 Serial IO and packet parsing in a background thread with asynchronous notification to Visual Basic.

A second DLL acted as a device driver for an A-to-D converter. This involved real-time modification to settings in the on-board 8254 timer chip to synchronize data collection.

A third DLL did numerical computations on wafer data.

Also wrote Visual Basic interface for accessing these calculations.

03/97 to 03/98 The Blue Team, San Jose, CA

The Blue Team was an Internet startup whose aim was to push-publish magazine articles, online. I wrote programs to download magazine articles unobtrusively while the subscriber read his email or surfed the web.

I wrote a background program to recognize when the user was connected to the Internet and poll the server for new articles. And, I wrote the code to download the the article and store it on the subscriber's machine. Polling and downloading used WinSock and WinSock2 extensively.

10/96 to 2/97 Vista Labs, San Jose, CA

Vista Labs designs telephony switching and test equipment on behalf of its affiliated manufacturing company, Larus Corporation. I designed, implemented and documented 8051 firmware to test a circuit board which performs communications to fiber-optics test equipment. I also wrote a GUI to control test program.

Used 8051 assembler and C to write firmware. Used Visual C++ and MFC to write user interface.

04/96 to 09/96 Wiltron Company, Morgan Hill, CA

Wiltron Company makes Optical Time Domain Reflectometers which test fiber optics cables.

Using Visual Basic, I developed programs to parse TL1 language commands and to manage the communications of those commands with remote devices. Used Visual Basic custom controls to perform communications over serial lines, modem, TCP/IP and X.25.

I developed an OLE Server in Visual Basic to simulate the company's hardware so that an NT Workstation could serve as test platform without external hardware.

I installed a TCP/IP to X.25 gateway.

05/95 to 2/97 TUTSIM Products, Morgan Hill, CA

TUTSIM is an advanced mathematical tool that simulates continuous dynamic systems. TUTSIM performs a digital simulation of an analog computer.

I ported TUTSIM from an MS-DOS product with command-line interface to an MS-Windows GUI product. I added computational features, including Fast Fourier Transforms and Bode Plots of simulation results.

I fixed a number of bugs in the mathematical algorithms that were part of the original product.

03/94 to 05/95 Zadian Technologies Inc., San Jose, CA

Zadian Technologies makes equipment to test disk drives that attach to interfaces

such as IDE and SCSI.

I designed and implemented an MS-Windows DLL to act as a device driver for the proprietary hardware. This DLL allows customers to design their own user interface to the hardware in either C or Visual Basic. In addition to Visual C++, I used Microsoft Assembler, and SoftICE for Windows extensively.

Wrote a VBX to do Visual Basic event notification of data and status returned from the hardware.

I wrote a large user-interface program called SoftProbe. This gave the user control of the Zadian's proprietary hardware. I used Visual Basic, various add-on custom controls, various add-on tools for Visual Basic, and Access database.

01/91 to 03/94 Earlier Experience

Earlier experience includes a DLL Serial Device Driver to bypass the serial driver in Windows 3.1, a Printer Device Driver for Windows 3.1, and embedded programs for the Motorola 68331 and the Motorola HC16, and a frequency channel planning tool for Cellular Communications. Details on request.

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The original web site on which this document is based has a page for submitting messages to the web site. These messages are then emailed to me from the web site. (This method hides my email address from spammers.) To send me email, please visit www.JimSerwer.com/resume/resEmail.htm.

Download Resume

This document is mostly a transcription of a web site. The web site has a page for downloading this resume to a local file. Since you already have this file, you do not need to download it again. The URL for downloading this file is www.JimSerwer.com/resume/resdwnld.htm.

SignetSure

There are several references to SignetSure in this resume. The original web version of this resume contains direct hyperlinks to the SignetSure web site. The SignetSure web site is www.SignetSure.com.
