

Peter Partch

Senior Windows Software Developer specializing in User Mode and Kernel Mode Programming

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Experience

Windows developer (user mode) for over 19 years, C/C++ for over 19 years. Managed code experience for over 7 years (primarily C#, some VB.NET, managed C++/CLI, and MIL). For the last several years working with WPF (and some Silverlight), WorkFlow Foundation, and WCF. Provided support for development efforts as well as training through Trek Services and UCI Extension for COM, C++, MFC, WCF, WinForms, Silverlight, and WPF.

Software/Development Contracting

October 2010 – April 2011 **Beckman-Coulter**

Part time contracting with Beckman-Coulter for WPF development on tier 1 hardware developing a medical device with a WPF touch screen UI using Windows XP embedded on low-end hardware (ATOM single core with hyper threading). Primary duties are to analyze performance issues and suggest techniques to resolve such issues. Explore and produce technical paper on multithreaded UI with WPF (MAF cross app-domain UI elements, multiple top level windows running on own UI thread, and single top-level window running UI controls with each control running on own UI thread).

November 2009– September 2010 **Alcon Labs**

Architecture/development of next generation phaco medical device for a medical device manufacturer. This new cataract surgical equipment will make use of WPF for the user interface with an architecture implementation using model view-view model design pattern. This is a turn-key Windows 7 embedded product running on a device with custom hardware subsystems and touch screen. Responsible for the overall UI layout, custom controls, custom 'modal' dialog system.

February 2009 - November 2009 **In and Out Burger/Alcon Labs**

Working for two customers (In and Out Burger and Alcon Labs) as temporary contract labor; advising on new .Net technologies. WCF consulting and code review/Silverlight code review and creation/delivery of custom WPF class for Win32 C++/WinForms developers (custom turn-key applications).

University of California Extension

January 1997 – 2004, 2008-2010

Taught extension courses on .Net technologies: Windows Presentation Foundation, Windows Communication Foundation, Silverlight, and Windows Workflow Foundation. Previous coursework includes: WinForms, .Net Framework, Code Access Security and Crypto, Component Object Model (two courses using straight C++ without tool support: Fundamentals of COM and Intermediate COM and DCOM) Intermediate ActiveX Template Library. These classes have been taught on campus and on-site at local companies (Beckman, Unisys, WonderWare, Simulation Sciences, Honeywell (PA), and Ericsson). Current course descriptions and materials can be found on my web page: <http://www.pmconsult.com/>

Wonderware

2003 – 2008 (Permanent, Principal Software Engineer)

Member of ArcestrA User Interface group and Web based Clients group. Loaned out to various departments for technical assistance and debugging. Worked primarily in .Net (Windows Forms) and did Code Access Security modifications for Web based client side WinForms controls. Some work with MSI installer and C++ Component Object Model (mostly debug work) for the Runtime Systems group. Tasks included assisting team investigating WinForm control integration with a legacy unmanaged window host, detail techniques to enable managed/unmanaged code interop via COM (with current product having 1000+ IDL files), and a feasibility study for porting some of the product line to Windows CE.

Unisys Corporation

2001-2003 (Contract)

Develop generic COM method interceptor for enabling Aspect Oriented Programming by extending the Universal Delegator (Keith Brown: MSDN Jan 1999) . Assisted in porting Universal Delegator to 64 bit Windows. This was the basis of "The Component Balancer: optimization of component-based applications" paper published in the IEEE by Jim Fontana

PowerCOM USA (Startup)

August 1999 – 2001 (Contract)

Build Windows NT 4 Device Drivers and corresponding User mode library for 1553 and ARINC communication cards intended for laboratory experimentation. The User mode library was constructed to support COM with Visual Basic being the primary GUI development tool. Scheduled work includes developing device drivers for Windows 2000 and Windows 98 (WDM) and Windows 95.

Pick Systems

June 1999 (Short term contract)

Contracted to locate and fix an elusive bug assumed to be associated with COM. Succeeded in locating and fixed the problem (program would report "COM not initialized" error sometime during its execution. Problem turned out to be CloseHandle on an unopened handle initialized to zero). Review all ATL generated components and interface design.

WonderWare

July 1998 – December 1998 (Contract)

Review proposed COM interface design and system architecture for new factory automation suite (ArchestrA suite). Proposed an initial design for ActiveX scripting support for new suite.

KeyLime Software (Startup)

January 1998 – July 1998 (Contract)

Provided advice on COM/DCOM, security, and multithreaded COM programming techniques for a startup company (primarily inter-machine communication via DCOM). My primary function was to help bootstrap the development team that was not intimately familiar with COM.

WonderWare

March 1997 – January 1998 (Contract)

Provide COM expertise in effort to develop an extensible database browser (user interface and model component) for a major revision to factory automation control software. Responsible for interface design and documentation of the database browser. Member of a team responsible for integrating a generic ActiveX control container into an existing design tool (legacy C code). Support effort to integrate and extend the proprietary scripting engine so that it works with embedded ActiveX controls.

Unitech Research

October 1995 – June 97 (Contract)

Provided technical support and advise on new product development using MFC. Responsible for design of the user interface and business logic component of a three tier architecture proposed by NTT corporation (Japan) and the Computer Institute of Japan. MFC used as a basis for building a custom ActiveX control container with design time and run time behaviors similar to Visual Basic but using a proprietary database and binding architecture. Extensive use of COM custom interfaces for middle tier component. Worked with ProForma Corporation to expose COM Automation interfaces (dual interfaces) to an existing GUI business-modeling product: ProForma Workbench.

Gazelle Corporation (Startup)

June 1995 - September 1995 (Permanent, Software Developer)

One of two primary architects working on a software product for Windows 95 providing user interface, model/persistence, and device driver support for a custom PC peripheral device utilizing a client-server model. A design was developed and, using OLE/COM as object integration substrate, several COM out-of-process servers including standard marshaling proxies and stubs for custom interfaces were created and tested. Provided dual interfaces for COM wrapper of hardware driver to support driver testing via Visual Basic.

CCC Development Company

February 1994 - June 1995 (Permanent, Software Developer)

Member of the architecture group responsible for design, coding, support and documentation of a C++ class library and tools for CCC's new suite of Windows based business products. The class library and tools were developed using object oriented analysis and design (Booch '94 methodology) and implemented using C++, Rogue Wave and MFC as a basis (for model and user interface). Developed the "Platform Manager" shell and all custom controls for the main application frame and MDI child window manager used to house all of the business applications. Wrote Visual Basic extension DLL to support SQA testing of the user interface custom controls. Tasks included writing custom MDI child frames, custom controls, custom owner-draw menu elements and message handling, font management, and multiple resource DLL management. Developed and conducted a class in Win32 development for CCC in-house training.

Miscellaneous Consulting Work

April 1993 - February 1994 (Contract)

Converted Visual Basic 3.0 application to Visual C++ using MFC 2.5 ODBC database classes. Developed Visual Basic for Windows patient/client entry system and report generator for health care professional using Microsoft Access database engine. Developed graphical meal-plan organizer using Visual C++ for Microsoft Windows using MFC 2.0. Developed proposal and proof-of-concept prototype for Navy to convert text based user interface to MS Windows using Visual Basic for data collection post processor. Developed Paradox relational database application for health care professional.

Rockwell International

February 1984 - March 1993 (Permanent, Member Technical Staff)

Software developer providing support for the SPPD, a TI C30 digital signal processor multi-chip module developed by Rockwell. Worked on Sun workstation and PC version of Signal Processor Advanced Development Environment (SPADE) for software development for a multi-processor application. Developed a Visual Basic version of SPADE, along with supporting Dynamic Link Libraries (DLL's) providing Display Independent Bitmaps of telemetry data and interface to the VME memory map through the E000 page. Lead engineer in an effort to port a real-mode PC

application to protected mode for PC-SPADE development environment using Zortec C++. Designed and coded video support for 256 color (64 true gray scale) display for video frames on VME hosted Radsys PC using Microsoft C.

Developed a generic data collection system using a VME multiboard 80386 PC (Radisys) using C (interface library was developed with callback functions and conditional compilation to allow building with either Borland or Microsoft C compilers), 4 32-Mbyte VME memory cards, and custom VSB bus data collection VME card for high speed data retrieval. Installed Novel network for enabling remote control of software running on the VME Radisys client machine.

Lead software engineer responsible for completing a RADAR data collection system using 3 PC's communicating by RS-232, an Ampex DCRSi high speed tape recorder, and custom designed hardware interfaced to controlling PC via DMA and discrete lines written entirely in Borland C. Extensive support provided to hardware integration effort. Maintained data analysis tool used for analyzing the data collections runs (up to 500 Mbyte files) written in ANSI C.

Lead software engineer responsible for completing a 20,000 line RADAR application program hosted on 80386 33MHz PC connected via DMA card to custom designed RADAR receiver and IRIG time code generator using Microsoft C. Instrumental in compensating for significant schedule overruns and correcting serious design flaws culminating in a successful on-time software demonstration.

Design, code, and simulation of a real time RADAR application using a TI 320C25 digital signal processor controlling 4 Zoran vector signal processors.

Design, code, and checkout software in support of ring laser gyro navigator targeted for a Motorola 68020 embedded processor. Responsible for multitasking executive required to run without disabling interrupts, scaled fixed point data processing, and communications. Program development on Sun Microsystem workstation using cross-assemblers, CASE tools, and emulators. Work done primarily in C and 68020 structured assembly language.

Responsible for maintenance of the Operational Ground Program Calibration and Alignment simulator, a large and complicated FORTRAN program hosted on a Gould minicomputer. Additional responsibilities included the designing and coding of a real-time data acquisition and processing program hosted on an IBM AT microcomputer using 80286/80287 assembly language. This task required development of high speed RS-232 communications interrupt handlers, extensive math coprocessor routines for real-time data manipulation and displays, creation and maintenance of large data files (2 Mbyte and larger), and graphics/hard copy utilities. Post-processing utilities for data manipulation and plotting were developed in 'C' and assembler. Other accomplishments include the design of memory disruption software recovery algorithms, software verification testing, and design of an orthogonal transformation algorithm to predict accuracy of missile trajectories using third order tensors.

Special Skills

Extended knowledge of .Net (WPF and Silverlight, WCF, WWF, CAS, WinForms), Microsoft Installer, Active Template Library, Microsoft Foundation Classes, and Component Object Model. Use of Microsoft IDL for use with COM custom/dual interfaces and dispinterfaces. Proficient in C# and Visual Basic.Net, Intel 32bit assembly, Motorola 680x0 assembly, C and C++, FORTRAN.

Education

- MS, Engineering Science, California Institute of Technology, Pasadena, June 1983
- BS, Engineering Science, University of California, San Diego, June 1981

Honors

- Wonderware: Multiple Technical Merit Awards and bonuses
- CCC Technical Merit Award
- Rockwell International Outstanding Achievement Award.
- California Institute of Technology Fellowship.
- Provost's Honor List, University of California, San Diego.