

KEY SKILLS & TECHNOLOGIES

- Modern C++, C, C#, Unix Shell Scripting.
- Object Oriented Analysis and Design, Generic Programming in C++, Design Patterns.
- Multi-Threaded and Network Programming on Windows and Unix flavors. Asynchronous Programming.
- Win32, WinRT, .NET, COM, Winsock, POSIX, PThreads, STL, Boost, Qt, Protocol Buffers, Thrift, XML-RPC.
- Application, Service/Daemon, and Driver Development on Windows and Linux.
- Distributed Computing, Distributed Databases, Cluster Technology; High-Availability Clusters.
- Programming Language Design, Abstract Syntax Trees, Parsing, Type Checking, Interpretation.
- Visual Studio, GitHub Copilot, WinDbg, GDB, Eclipse, XCode.

PROFESSIONAL EXPERIENCE

CITRIX, Fort Lauderdale, FL

July 2018 - Present

Staff Software Engineer – R&D XenApp / AppExperience and HDX Graphics

- Designed and implemented Application Experience features: Copy & Paste of files, Drag & Drop of files between client and remote machines, Browser Content Redirection, Geo Location Redirection (using Windows User-Mode Driver Framework).
- Developed new Citrix Virtual Channel network protocols and APIs for client-to-host content redirection for file transfer during Copy & Paste, file Drag & Drop, Remote Procedure Call for COM objects (C++), Geo Location data, and WIM (Windows Image Acquisition) for scanner and camera devices.
- Developed flexible C++ template frameworks for: data and RPC serialization, multi-threading safe object access wrappers (for containers and other STL classes), C#-style property templates for C++ (compatible with STL containers and smart pointers).
- Developed Telemetry Data collection and submission framework of client-side graphics capabilities.
- Mentored others on Object Oriented Design, Modern C++, advanced C++ coding techniques, systems design and programming, and other topics; hosted weekly classes and coding workshops.
- Lead small teams of engineers during development of new features.
- Maintained and debugged existing code base (C, C++, Win32).

DATACORE, Fort Lauderdale, FL

Mar 2015 – July 2018

Senior Software Engineer – R&D SANsymphonyV / Storage Driver Development

- Participated in the development of SANsymphonyV storage virtualization software (C, C++, C#).
- Developed new SSV features: TRIM/UNMAP support on SSD backend storage, Advanced Format disk support on the backend storage (native 4K sector size support), new performance counters. Most of the work was implemented using Windows Kernel Driver Framework.
- Participated in various research and development projects related to: storage drivers performance improvements on modern multicore CPUs (with awareness of cache lines / data locality, cache-line-pinging, multithreading on multicore CPUs, and locking); storage performance in distributed sorting.
- Mentored junior engineers on Object Oriented Design, C++, Systems Programming, and other topics.
- Lead a small team of engineers during development of SSV features.
- Maintained and debugged existing code base of SSV (C, C++, C#, Win32, Kernel).

CITRIX, Fort Lauderdale, FL

Sep 2012 – Feb 2015

Senior Software Engineer – R&D XenApp

- Participated in the development of XenMobile Suite of Apps (WorxHome, WorxWeb, and WorxMail) for Windows RT and Windows Phone 8.x (C++, C#).
- Developed new MDX features (Data Containment and Security, Encryption, IPC and RPC SDKs) for Windows RT and Windows Phone 8.x (C++, C#).
- Developed new features of Citrix Receiver for Windows (C, C++, Win32).
- Maintained and debugged existing code base of the iOS MDX/microVPN (C, Objective-C).
- Maintained and debugged existing code base of Citrix Receiver for Windows (C++, C#).

TRADESTATION SECURITIES, Plantation, FL

Jun 2012 – Aug 2012

Senior Systems Engineer

- Added new features to the EasyLanguage, Core Libraries, and IDE (C++, MFC, C++/CLI, WinForms).
- Maintained and debugged existing code base of the EasyLanguage, Core Libraries, and IDE.

TLO, Boca Raton, FL

Feb 2009 – May 2012

Senior Software Developer

- Designed and implemented standalone read/write database engine optimized for high volume of inserts (C++, STL, Boost, Thrift, Bloom Filters).
- Designed and implemented distributed, high speed, fault tolerant read-only data store; developed custom asynchronous RPC mechanism (C++, Protocol Buffers, Boost ASIO).
- Designed and implemented a domain specific programming language for data manipulation; implemented a type checker with static type system and implicit type conversions; implemented an interpreter (C++, Flex, Bison, Abstract Syntax Trees).
- Designed and implemented distributed ETL (Extract-Transform-Load) system for parsing, transforming, and loading data-sets into a distributed database; developed programmable and distributed data transformation pipeline (Linux, C++, STL, Boost).
- Developed Linux file system monitor (C++, Boost, iNotify, XML-RPC).
- Developed peer-to-peer network scanners and crawlers for Windows (C++, Boost, Winsock).

CITRIX, Fort Lauderdale, FL

Oct 2006 – Feb 2009

Lead Software Developer – Citrix Common Connection Manager, 08/08-02/09

- Developed CCM front end and back end C APIs for use by the company and clients.
- Designed and implemented underlying communication layer using C++ and COM.

Lead Software Developer – Application Streaming and Virtualization, 05/07-07/08

- Developed application streaming and virtualization software: user level and service components of the client.
- Rewrote the application profiler GUI from C++ MFC to C# .NET.
- Debugged and fixed stress test and application compatibility issues.

Lead Software Developer – Lifecycle Maintenance, 10/06-04/07

- Debugged crash dumps, memory leaks, stack and heap corruptions, and logic errors.
- Used various utilities to fix software bugs: WinDBG; file, registry, and process monitoring tools.
- Maintained existing code base and rewrote legacy code.

IMAGINE SOFTWARE, New York, NY

May 2006 – Sept 2006

Software Developer

- Developed real-time trading and risk management software for managing equity and fixed income instruments.
- Introduced new securities into the system; maintained existing code base; redesigned and rewrote legacy code; participated in debugging efforts.

NATIONAL DATA CONVERSION, New York, NY

June 2000 – Apr 2006

Software Developer

- Created software for data recovery and processing of file systems and tape backup formats (Windows, Linux, C++).
- Developed data conversion/duplication/recovery utilities for Windows and Linux (which included SCSI device programming under Windows using ASPI, and Linux using SCSI Generic Driver).
- Data mining, forensic data recovery, data recognition, and reverse engineering of various backup formats.
- Litigation support – email retrieval and processing from various server environments; electronic evidence recovery and gathering.
- Spearheaded benchmark testing of IBM Tivoli Storage Manager vs. Veritas NetBackup Data Center for IBM Corp. This included testing and bug fixing on the latest release of TSM with IBM.
- Created and maintained company's website.
- Designed and implemented web-based credit card authorization and charging software.

EDUCATION

NORTH CAROLINA STATE UNIVERSITY, Raleigh, NC
Bachelor of Computer Science

1999 – 2003

PERSONAL PROJECTS

C++ Blog – Practical Modern C++

- Published over 100 short articles about various C++ topics.
- See more at <https://vorbrodt.blog>

C++ Channel – Videos of my programming classes

- Recordings of C++, OO, and Systems programming classes I held at work and elsewhere.
- YouTube link: <https://www.youtube.com/channel/UCWym9odMAvW-WW4kjFzTWQ>

GitHub – Hobby projects

- Hobby projects including OpenGL 4.5 based renderer and Windows SCSI API wrapper .
- See more at <https://github.com/mvorbrodt>