

## Overview

I am a software developer in large-scale distributed systems, object-oriented languages, network communications, compilers, databases and Web technology. I have experience in all important aspects of engineering, including development, testing, documentation, requirements and business analysis, and project management.

## Extensive Experience

These are some technologies I am particularly proficient in, and how long I've spent using them.

- **Large Scale Distributed Systems:** 4 yrs. Scalable storage, analysis, indexing and queries. Web search and general purpose storage and query.
- **C++ / Object-Oriented:** 8 yrs. (C: 11 yrs.). Object-Oriented Design. Sockets, database, low-level GUI work.
- **C#:** 5.5 yrs.
- **Web Development:** 4 yrs. Database/Web Integration. HTML/JavaScript/CSS. Perl, Mason, Java Applets/Servlets, StoryServer, CGI, Ruby/Rails.
- **Database Development:** 7.5 yrs. Application design, table design, performance work and low-level compiler work. Oracle 7 through 8i, Sybase, PostgreSQL, MySQL.
- **Perl:** 6 yrs. Years of tools, large-scale testing, data processing, web development, object-oriented. Wrote widely-referred-to paper on [Perl XS](#).
- **Java:** 2.5 yrs. Servlets. Applets. Applications. Worked on free implementation of core java.\* hierarchy.

## Work History

### Microsoft

October 2003-Present

*Senior SDE - Compiler For New VI Data Manipulation Language / DSL Compiler*

Designed and developed compiler for a new functional language for textual DSLs and data mashup, query, processing and manipulation.

- Developed query compiler to execute queries in a SQL runtime, producing optimized, readable SQL code.
- Developed schema and data compiler to create SQL tables and rows from language constructs.
- Wrote Visual Studio completions, innovating to allow efficient keyword, identifier and member completion while typing in a language with a different idea of syntax.
- Wrote other Visual Studio language services including collapse/expand (outlining), and parameter help.
- Led multi-developer efforts to write SQL compiler.
- Contributed key insights and designs to improving usability and flexibility of the textual DSL parser generator.
- Designed and wrote innovative language features allowing for XML query.
- Wrote intuitive content extraction for generic HTML files.
- Wrote library to import and query against CSV files.
- Led multi-developer efforts to write SQL compiler.
- Patents on key elements of the language.

*Senior SDE - Distributed Storage*

Developed, tested and ran a large-scale service that allowed storage and processing of extremely large amounts of data.

- Wrote widely-distributed internal test strategy white paper for large-scale distributed services, used across Microsoft.
- Wrote first installer for the distributed storage system.
- Wrote service to generate, collect and analyze important log data from extremely large number of machines.
- Wrote the primary service monitoring system, continuously mining logging and performance data across all computers to alert when problems occurred, and aid in diagnosing and fixing said problems.
- Sped up the release process to reduce code drift and increase turnaround time to catch problems.
- Wrote local tests that mimicked the distributed system in as many respects as possible, driving features into the product where necessary to make it happen and ensuring the quality of the system before it was deployed.
- Designed and implemented hybrid model-based system applicable to both stress and normal tests.

*Senior SDET - Bing*

Developed, tested and helped run Microsoft's large-scale search service. Architected test strategy for the entire product, managing multiple people to get the core important tools and infrastructure running.

- Wrote the first distributed installer and startup for the Search service.
- Architected the test infrastructure used by all of Search, and managed multiple people to get the work complete.
- Designed and wrote scalable distributed build system used to build the product daily and constantly, and kick off tests and deploy to machines.
- Wrote test plans, designed and implemented automated tests for the downloading, parsing and indexing of web pages, conversion, and internationalization.
- Wrote the first automated end to end integration tests.
- Architected common libraries to aid in installation, diagnosis, testing and working with the product.
- Wrote widely-used tools to aid the running of the system, running programs in parallel on many machines and performing important administrative tasks.
- Wrote universally-used tools to mine the service for crashes and display the most frequent stacks.

### Netscape

Jan 2002-July 2003

*Sr. Software Engineer*

Extensive C++ and web development, plus web/database integration. Worked on HTML forms, scripting capabilities and graphical layout for the Netscape web rendering engine ("Gecko"), and wrote many tools to make development life easier for the large project. A huge number of small accomplishments can be found by [searching the public Bug database](#); the largest and most far-reaching changes are listed below:

- Participated in the W3C [XForms Working Group](#)
- Managed several sub-modules of the Gecko / Mozilla project, including form controls, form submission, and later, printing
- Rewrote form controls to [honor display: none](#)
- Rearchitected [form submission](#) to fix existing problems and enhance maintainability
- Rewrote printing to be simpler and less error-prone, created interface to create thumbnails of a web document.
- Designed more modular [build and directory system](#) for the Mozilla project
- Made large contributions to many other areas of product, including the event system, JavaScript DOM, security, the base XPCOM libraries and data structures (esp. hashtables)
- Wrote a set of [developer tools](#) for use by other members of the project
- Wrote [tinderbox3](#), a next-generation tool for managing a widely distributed development project and detecting errors early
- Wrote [visual patch analysis](#) for the Bugzilla bug system.
- Wrote a rule-based tool that [reviews programs for common errors](#)

May 2001-Jan 2002

## WrightHaven

Sr. Architect, Partner

Consulting, technical architecture, project management.

Projects:

- Consumer Services Website -- dynamic website written in Mason/Perl, PostgreSQL database
- Shopping Cart System -- Mason/Perl, PostgreSQL database

## Ideas & Effects

May 2000-April 2001

- *Role: Director, R&D*  
Duties: Oversaw technical architecture, project management of all projects in company. Sales duties, bidding for projects as well. 4 direct reports, 5 people total underneath at any given time.  
Project oversight included:
  - Real Estate Booking System--2-3 persons, 4 mos., Perl CGI, Java networking & threading, Oracle 8i
  - Timesheet System--(also created requirements & architecture for this) 2 persons, 2.5 mos., Java Servlets, Perl CGI, Oracle 8i
  - Remote Hardware Testing Systems--(less oversight on this one) 1 person, long term, Java, hardware interfacing (COM ports), threading & networking
  - Web Store Search Engine--2 people, 3 months, Perl CGI, Oracle 8i
  - Credit Card Processing System--1 person, 1 month, Perl CGI
  - Small Contracts--usu. 1 person, ~1-2 weeks, Perl CGI
 Other duties included system administration, general network architecture, security measures.  
Created the development, release and test process for Ideas & Effects.
- *Project: WWW Search Engine. Roles: Customer Management, Project Management, Analyst & Programming, Sysadmin*  
Managed one person. Created full project plan, architecture, design, contracts, hour tallies. Full delivery from conception to test to production.  
Wrote website in Perl hooked to Oracle 8i database, did FastCGI work as well. DBA duties, installation & security work of all software involved.
- *Project: Recruiting System. Roles: Project Manager, Analyst*  
Internal system to assist Ideas & Effects recruiter, which it plans to spin off as a separate company. Created a full requirements and business analysis, project plan, and requirements document for the system. I had a hand in a business plan for the product as well.  
Finally, I created the database schema and set up Oracle to work with it.  
Product uses Perl CGI, Oracle 8 database, HTML 4.0, CSS1, and some mean JavaScript.
- *Project: Registration System. Roles: Technical & Business Analyst*  
Wrote general product plan, requirements document, led team on initial prototype, created database, coded some Servlets.  
Prototype used Java Servlets, Oracle 8 database.

## Independent Consultant - Various

Jan 1997-May 2000

As a consultant I completed a variety of projects, with an emphasis on database-driven network applications, including Web and TCP/IP, for companies such as Swiss Bank, Lycos, the Chicago Tribune, Land's End, and Follett book publishing I made extensive use of my skills in Java, C++, Perl, Oracle and Postgres, among others. What follows are some of the more significant projects:

- *Client: CSG Systems. Project: Telephony Order Tracking System*  
C++ and RogueWave Tools.h++ on an Oracle database. I worked on workflow management software and some daemons using a major OO framework. Additionally, I implemented several useful tools in Perl 5, including software to assist with population of data for automatic testing. Finally, I wrote an experimental Java reimplementations of some of the technology.
- *Client: MCI-WorldCom. Project: Telephony Order Tracking System.*  
Sales reps use this system to enter new local service orders. It runs over the web on Oracle 8 PL/SQL. I worked on the Web Interface (PL/SQL), interfaces to downstream systems (C++/Sockets/Registry/FTP/CORBA/RogueWave). I designed and implemented common C++ base and helper classes for the majority of the backend systems, and restructured the group's login environment and build process. Created a set of classes that abstract database access to retrieve information simple, safely, and hierarchically, and created a small macro language to make maintenance and extension of these classes easier. Currently writing a generalized data feed program that will allow downstream systems to choose what information they get and how often.
- *Client: Land's End. Project: Online Catalog.*  
Worked on a team of 8 programmers using Vignette StoryServer to create a WWW online catalog. Specific responsibilities included the content entry portion of the site, where the producer go to enter data on products and how they will appear on the site.
- *Client: Lycos, onhealth.com, small Internet Search Engine Firm. Project: Mentoring, Programming.*

Mentored clients in use of Vignette StoryServer, with DHTML and JavaScript programming responsibilities. Was critical factor in several successful launches during this time.

- *Client: Major Bank. Project: Policies Document.*  
Java and Metaphoria DTS to present the contents of Microsoft Word policy documents to the Web in an indexed, searchable form consistent with the original. Wrote a complete, tolerant HTML parser in order to break up the document correctly. Was project lead, architect, and sole implementor.
- *Client: Chicago Tribune. Project: [Flagship Website](#).*  
Used StoryServer templates and a Sybase database (both Unix and Win95). Acted as a consultant to a team of 7 programmers and a number of Chicago Tribune editors and producers. Designed and implemented large-scale caching system to synch site content with editorial content entry. Created columnist sections of online newspaper. Created the two Alternate Versions of the site dynamically, pulling the same stories as the main site. Acted as mentor to a new StoryServer programmer, training her in StoryServer and the nuances of web programming.
- *Client: Automatic Expense Reporting Firm.*  
Wrote programs in C to monitor and alert system administrators via page and email when anything went wrong with their database server or network, and when there were discrepancies in data. User Informix database interfaces from C along with standard UNIX system calls.
- *Client: Major College Textbook Company.*  
Wrote a Financial Aid transaction server for bookstores. I was given a set of code that was not working, identified the architectural flaws and rewrote the portions of code that needed rewriting. Extensive use of sockets.

## Gold Eagle Company

*Jun 1996-Jan 1997*

Administered Novell network, SysV Unix Server, Progress database, 70-80 client computers with Win3.1/95. Wrote database programs in MS Access and Progress (Symix).

## Knowledge Base Systems

*Mar 1995-May 1996*

Co-founder, lead software developer for WWW-based educational quizzing system using C++, Perl, CGI, Linux web server. Initially ran in Chemistry lab with 30 Win3.1 clients running Netscape.

## NCSU Computer Science Department

*Mar 1995-May 1996*

Graph theory research (including the four-color theorem) using C++, T.A.+tutor for Discrete Mathematics; tutor for C++, Advanced Data Structures courses.

## Open Source Development

Open source projects involve teams of programmers and complex, fundamental technologies like languages, web browsers, and databases. Here are some of my most significant contributions:

**Video Game Engine:** Apr 2003-Present. C++, OpenGL, Direct3D, Network Programming.

I am working on an unreleased game engine from the ground up, including 3D rendering and a full physics engine.

**Mason:** July 2001 to Present. Perl, Mason, PostgreSQL.

Mason is a middleware Web development language like PHP or StoryServer. I write essential utilities for the language, including a generalized login/session management system called [UserLogin](#).

**GNU Classpath:** June 1998 to present. Java, JNI.

Working on an open-source, clean-room implementation of the java.\* class hierarchy, Specific responsibilities include JavaBeans and the Virtual Machine Interface, which is Classpath's interface to different Java Virtual Machines.

**OpenQubit:** Mar. 1999 to Aug. 1999. C++.

Did some work on a project whose aim is to simulate quantum computers on classical ones.

**Project 59:** 1998. C++, Network Programming.

Early in my career I headed an open source project to write utilities for Ultima Online, a massively-multiplayer online RPG (role-playing game). These utilities used the datastream sent to/from the client and server, which I played a key role in decoding.

## Education

### North Carolina State University

*1994-1996*

2 years concentrating on core computer science courses through junior level. Teacher's Assistant and tutor for Discrete Mathematics and Advanced Data Structures courses.

## Activities of Interest

**Mathematics/Logic:** I am working on a variety of hard problems, including the four-color theorem, combinatorial logic gates, and unitary matrix mathematics. I have played with various applications of genetic algorithms, and wrote a program to view three-dimensional slices of four-dimensional equation space.

**Boy Scouts:** I was a Scout leader for a year in Troop 777 in Colorado Springs. I earned the rank of Eagle Scout as a boy.

**Other Interests:** Philosophy, drumming, kayaking, tie-dye, hiking, mountain climbing