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Objective

Flexible employment utilizing skills in all phases of software development, mentoring, and leadership to produce efficient, reliable, and maintainable software in a learning organization.

Summary

30 years of professional programming experience, with a strong background in object-oriented programming and design. Three years of Smalltalk programming; 22 years of C++ programming, with an extensive C background. Other skills in computing technologies including content management, relational database design, client/server systems, workflow analysis, networking and compiler development.

Technical Skills

Domain Experience

Automatic Differentiation, Billing Systems, Client/Server Systems, Content Management, Expert Systems, Financial Risk Management, Framework Design, GUI Design, Information Retrieval, Language Design, Medical Informatics, Networked and Distributed Systems, Object & Relational Databases, Object-oriented Programming, Parsers, Programming Language Semantics, Telephony, Testbed Development, Type Theory, Virtual Machines, Workflow

Languages & Toolkits

Assembly, C/C++/C#, CLIPS, Haskell, Java, Lex/Yacc, RubyOnRails, SQL, Scheme, Smalltalk, Standard ML, Tcl/Tk, TeX, XML/XSLT/Schema

Databases and Platforms

Ant, AOLServer, CORBA, IBM Websphere MQ, Linux, MySQL, MS SQL Server, MS Windows, ODBC, Redex, Solaris, Sybase

Accomplishments

Software Development

- [SSC] Development of server infrastructure to distribute financial market data. Server used a gateway plugin architecture to allow data from multiple sources to be unified for consumption by risk analysis platforms. Development of API for third-parties to publish data through market data gateway, including extensive test suite.
- [SSC] Order of magnitude scalability exercises for client/server platform in internal banking environments. Developed scaling methods to handle hotspots in client data and improve load distribution. Diagnosis and remediation of unique bugs arising from highly-secured bank environment. Enhancements to system for operations monitoring.
- [SSC] Analysis and refactoring of stand-alone software (size in excess of 500KLOC) to implement a scalable client-server architecture. Architecture development required protocol design, failure-mode analysis, and network traffic analysis using established middleware protocols (IBM MQ) as a transport layer.
- [SSC] Development of a market price feed simulator in C#. Simulator used DDE and Reuters SSL protocols to transmit price data to client software under test.
- [SSC] Major re-design of internal architecture supporting the maintenance and consistency of live price feeds. The feed infrastructure required extensive analysis and profiling to maintain system performance while achieving a higher level of system integrity and reliability.
- [SSC] Designed and developed gateway server to ameliorate processing bottlenecks in CORBA integration.

- [HSS] Developed prototype content management system for a Christian event promotion business.
- [HSS] Developed prototype UIs for USA HIPPA-compliant social service case management systems.
- [HSS] Developed data-entry systems for ontology and geographic data.
- [HSS] Developed ETL and data reconciliation software to unify Irish addresses and place names.
- [HSS] Developed interactive web-site for Irish geographical data.
- [AOL] Design and prototype of systems to push content updates to web-cache systems in C/C++ and Java. Both platforms were needed for operational cost/benefit analyses. The system design leveraged forward-chaining production system technology to predict queries affected by updates to an extensive XML document base in real-time.
- [AOL] Designed and developed systems to gather data about member behavior and produced unique data analyses from the detailed behavior data using data-mining techniques adapted from bio-informatics algorithms. The data analyses generated a fair amount of interest from upper management; however, legal complications associated with user monitoring blocked the further progress of this project.
- [AOL] Developed server architecture to establish connectivity between desktop instant messaging systems and european SMS services. The system had four different server farms which communicated with nine other major internal server infrastructures, including both US and European billing systems. The system exceeded its performance targets by 50 percent and was run with no modifications for over two years.
- [BBT] Development of error architecture for real-time switch applications. Integrated error-handling system into home-grown collection frameworks.
- [BBT] Design and prototyping of framework support for real-time switch applications, including modules for communication with network management elements and safe real-time locking with priority inheritance.
- [BNR] Design and implementation of a protocol for OSS operations on Nortel DMS series telephone switches. The protocol implementation included a rich C++ API, with parsing, extensive parse-tree manipulation, and message factory facilities.
- [BNR] Design and implementation of a scripting language for a generic software library test tool. The tool was used for verification and regression testing of three different libraries across several Unix variants.
- [IMN] Design of a C++ embedded rule engine with dynamic rule-base loading capabilities to leverage the development effort in an existing set of object-oriented development frameworks. The system included facilities for dynamic binding and dispatch of C++ methods.
- [IMN] Integrated and extended a public-domain Smalltalk embedded forward-chaining expert system shell. The application domain required modifications to the compiler to support a more robust explanation and rule-base partitioning scheme. The extensions were used to retrofit a workflow system and in a prototype medical treatment protocol identifier.
- [RSI] Data architecture and UI development of hospital information systems. System was refined through multiple iterations of business process analysis with a number of health care providers across the USA.
- [RSI] Redesigned a C++ class library encapsulating the EHLLAPI 3270 terminal emulation interface to support scripting facilities. This resulted in a system which enabled users to handle changes in legacy system navigation with minimal programmer involvement.
- [RSI] Test design and validation of multi-threaded, parallel applications.
- [CSI] Designed portable cell-controller software including network programming language
- [ABC] Implemented and ported PLC programming software from MS-DOS to chronOS and VMS
- [CSI] Designed and developed network interface drivers for ISO protocol stacks
- [CSI] Architecture, design and implementation of ISO presentation and application layer protocol gateways. This software had the highest transaction rate in the market. It was ported to four different OS/Hardware platforms, with support for numerous proprietary back-ends.
- [CSI] Developed a serial device driver for PC-MOS (an early multi-tasking MS-DOS extension)
- [ABC] Developed ISO upper layer software and scenario interpreters for network interoperability testing.
- [CC] Ported and maintained terminal emulation software on first-generation PCs for Univac systems. This involved rewriting device drivers and extensive reverse-engineering of existing assembly code.

Applied Research

- [NUIM] Development of reduction calculus tools used to prove confluence of terms in research languages. Tool validation with both typed and untyped calculi, including the second-order logic involved in System F.
- [NUIM] Presentation of results from research team at the Brain & Computation Lab of the Hamilton Institute at NUI Maynooth for SFI grant interim review. This included presentation of both personal results and those of departed team members.
- [AOL] Adapted data clustering and sequence mining techniques from bio-informatics to information retrieval problems. The problems included offensive web-search filtering techniques, spam filtering, online-behavioral analysis. Additional applications to server failure-mode analysis were explored.
- [AOL] Simulated the interactions between content access patterns, internetwork topologies, and server loads to determine optimal network architecture and hardware requirements for global content distribution systems.
- [IMN] Completed a technology survey of object-oriented forward-chaining expert systems.
- [IMN] Researched, designed and developed a generic workflow system in Smalltalk. The software was developed using two different expert systems to support several different client/server environments. It was subsequently used as the integration platform for an integrated hospital information (ADTR) and billing system.
- [RSI] Refined internal software design and development patterns through the application of functional programming principles and category theory to object-oriented development.
- [RSI] Debugged numerous problems with development platform and in-house framework internals based upon broad knowledge of networking, operating system and virtual machine architectures.
- [CSI] Design, development, and maintenance of YACC-compatible event-driven parser generator which enabled the design of a programmer-friendly API to the MMS (ISO 9506/9507) protocol. The extended feature set also enabled its use in the implementation of network protocol state machines.

Leadership & Management

- [HSS] Founding director of corporation. Developed business plans and the technology to implement them. Negotiated content deals for website products.
- [HSS] Provided business case analyses for expansion of a religious event promotion business including plans for customer rewards and social networking feedback.
- [AOL] Assumed architectural responsibility and technical leadership for 10-year old ETL and content management systems and produced roadmap documents for the renovation of vital infrastructure. Provided technical leadership throughout the implementation of the roadmap systems, balancing immediate customer needs against the long-term rewards of delivering a modern infrastructure. Evangelized the use of standard ETL tools and web service architecture throughout the web-publishing organization.
- [AOL] Designed and reviewed key components of the AOL Video infrastructure roll-out, providing technical direction for all metadata and content management development connected with the video initiative. Coordinated metadata definition, responsibility and ownership among a globally distributed development team. Evaluated video content managements systems load and performance characteristics to assess scalability costs.
- [AOL] Participated in the development of ontology standards and the design of user interfaces leveraging ontology standards to provide effortless browse experiences through AOL/Time Warner's digital libraries. Designed and reviewed infrastructural system architecture for the capture and maintenance of controlled metadata vocabularies. The resulting data captured within the ontology systems was made a candidate for deployment across Time-Warner properties.
- [AOL] Successfully negotiated several project transitions between different global branches of a multi-national corporation. Project transition included documentation development, preparation of training, and mentoring in design and development processes. Was commended by divisional vice-presidents for the quality of the project work and transition process.

- [CCM] Coordinated multicultural research group for community development efforts in Albania. Successfully communicated vision and project requirements. Achieved a high level of work product ownership among the group members.
- [IMN] Coordinated small software team to develop a workflow system and integrate it into a hospital (ADTR) information system. Developed work plans and identified appropriate personnel to complete the system integration. Developed documentation and trained team members in system application.
- [CCH] Reorganized a troubled group into a coherent team by identifying and articulating the vision of motivated individuals. Developed a mutually supportive team culture which encouraged individual growth and corporate identity.
- [CCH] Supervised food-service operations which fed over 400 people per day.
- [YWAM] Achieved conversational fluency in Japanese, with technical fluency in specific subjects.
- [YWAM] Developed accounting procedures to enable the expansion of local community service. Elements of the methodology were used by a national organization, enabling staff to more clearly articulate vision and concretely plan its implementation.
- [AOL] Led and participated in development of software process standards for a global organization.

Work Experience

- [SSC] SS&C Technologies Ireland Limited [2008]
- [HSS] Heureka Software Systems, Ireland [2007-2008]
- [AOL] AOL Technologies, Ireland [1999-2006]
- [BBT] Contract work at BroadBand Technologies [1999]
- [BNR] Contract work at Nortel [1997-1998]
- [IBM] Contract work at IBM [1996-1997]
- [IMN] Imonics Corporation [1995-1996]
- [RSI] Raleigh Systems, Inc. [1992-1995]
- [CSI] COMMSOFT Inc. [1986-1987] [1989] [1990-1991]
- [ABC] Allen-Bradley Corporation [1985-1986] [1988]
- [CC] Chi Corporation [1984]

Education

- [NUIM] PhD Thesis (in progress): Non-Standard Interpretation of Mathematical Expressions [2010]
- (AOL) Independent Study in Information Retrieval and Data Mining [2001-2003]
- [CCM] University of the Nations, College of Christian Ministries [1999]
- (IMN) Independent Study in Expert Systems [1996]
- (RSI) Independent Studies in Functional Programming and Category Theory [1994-1995]
- [CCH] University of the Nations, College of Counseling and Health Care [1989] [1992]
- (CSI) Independent Studies in Programming Languages and Compiler Design [1990]
- [YWAM] Youth With A Mission, Tokyo, Japan [1989-1990]
- [CWRU] Case Western Reserve University, Computer Engineering [1982-1986]