Kenneth M. Thompson

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Summary

20 yrs	Embedded and Realtime System Development	15+ yrs	C/C++ Software Development
10 yrs	Java Application using JDBC/Swing/JNLP	10 yrs	Network Design & Implementation
5 yrs	EJB/J2EE OOD/UML Architect, Technical Lead	8 yrs	Project & Technical Leadership
5 yrs	mySQL/postgreSQL/Oracle DB Applications	15 yrs	Development Infrastructure Installation
10 yrs	High Performance/Embedded UNIX/Linux	10 yrs	High Performance Customer Facing Web Apps
15 yrs	Commercial Cable Headend/Telephony Products	15+ yrs	Full Product Lifecycle Development
3 yrs	MPEG development with 3 patents	15 yrs	HPUX/Solaris/Linux Admininistration

Experienced software developer and system architect with strong leadership, teamwork, communication, analysis and design skills. Extensive experience developing commercial cable headend and central office products. Demonstrated ability to organize and manage effectively, coordinating efforts within a team environment and across organizational units. Strong communication skills supported by college-level teaching experience, participation in U.S. and international standards organizations, and a successful joint development with a Japanese firm. *Pro bono* work includes web site maintenance for local braille organization, Open Source projects and CVS hosting for the RXTX project.

Education

Master of Science in Information and Computer Science — Georgia Institute of Technology, 1983

Bachelor of Electrical Engineering Technology — Southern Polytechnic State University, 1981

Recent Experience

System Architect (06/1996-present) — *MileStone Solutions Inc.*

Successfully completed several product life-cycles for cable, telephony and business clients including Itochu Cable Systems, Cingular, Satellink Communications. Ported Linux to various embedded products including routers, remote terminals and dedicated servers with customized application environments. Developed an outbound conferencing module using Intel/Dialogic hardware in a SCO/C environment. Performed detailed technical analysis and re-engineered a high performance online telephony database in postgreSQL and using Java and JDBC. Designed, developed and supported numerous distributed high performance systems using Java, J2EE (weblogic), JDBC, XML, postgreSQL, apache, JSP and servlets. Re-architected and rebuilt Cingular's IVR middle-ware replacing a mix of Solaris and Windows NT with a consolidated, high performance J2EE system. Rewrote Cingular's national SIM manager using Java and JDBC. Designed and implemented patented J2EE technology improving container and system fault tolerance. Key member of internal technology startup team introducing J2EE components into Cingular's billing system consolidation infrastructure. Key developer on one of the first large online ordering and fulfillment systems written in C++ using a Sybase data repository. This 3-tier system provided online grocery shopping with independent inventory from individual stores. Responsible for the design, development and production release of an Addressable TAP headend controller for Itochu Cable Systems. Designed, implemented and maintain the nowMessenger wireless text messaging client as a Java WebStart application. Created an automated online software purchase and license management system integrated with PayPal using Java. Establish and maintain development environments, providing resources and training for developers and clients. Install and support secure networks including email and web filtering.

Product Developer, Engineering (07/2004-09/2006) — *EGT*

Brought a new product from concept to customer field trials and initial sales. This product, HEMi, integrates MPEG2 encoding, SPTS/MPTS stream multiplexing, QAM Modulation and RF upconversion and opened a new market area for the company. It involved coordination of multiple vendors, application integration and new development in C and C++ on a custom Linux platform. Co-designed and developed a closed-loop multiplexing solution for EGT's MPEG encoders providing the timing and network communication components in C. Provided technical direction for a diverse team responsible for platform architecture, Verilog/FPGA design and implementation, RTOS support, device drivers and development infrastructure. Provided internal support to manufacturing and quality assurance teams.

Prior Experience

Senior Software Engineer (06/1994-06/1996) *ANTEC/Digital Video*
Senior Software Engineer (11/1991-05/1994) *Melita International/divine, Inc.*
Manager, Software Engineering (05/1989-06/1991) *IVEX Corporation*
Member of Scientific Staff (08/1997-05/1989) *Bell Northern Research/Nortel*
Senior Engineer (05/1986-05/1989) *BBL Industries*
Software Engineer II (05/1984-03/1986) *Intecolor Corporation*
Software Engineer (05/1983-05/1984) *Chalk Board, Inc.*
Instructor (adjunct) (09/1985-06/1989) *Southern Polytechnic State University*

Lead system designer of MPEG video server and designed and implemented in C/C++ an MPEG Video Pump component with custom IRIX drivers on a Silicon Graphics platform. Participated as ANSI delegate to ISO MPEG Standards Committee. Authored SCTE presentation on behalf of the VP of Engineering. Received patents for MPEG server designs.

Lead role in software design for next generation UNIX-based product. Designed and implementated a high reliability RPC based Client/Server platform and messaging subsystem. Established a software development environment and trained members of the development team.

Responsibilities included budget, personnel and project administration, and technical lead for IVEX's software development department. Established software development environment and processes improving product stability and time to market. Lead software architect setting development strategy and leading software development of an FAA Level D certified visual system.

Ported and enhanced a proprietary RTOS written in 80xx assembly and supporting PL/M to extend the market life of a major product.

Managed critical software project delivering on time and budget. Coordinated product release with internal departments and provided technical assistance developing software for custom hardware. Custom driver development for XINU RTOS.

Designed custom algorithms for proprietary graphics hardware extending product life and performed RTOS analysis and evaluation of RTOS.

Co-designed and developed computer graphics programs. Provided engineering assistance to manufacturing and product presentations at trade shows.

Developed and taught undergraduate courses in programming languages, computer organization, and computer graphics. Developed a microprogramming simulator for lab use.

Affiliations

Member Institute of Electrical and Electronics Engineers (IEEE)
Member Association for Computing Machinery (ACM)
Registered Engineer in Training, State of Georgia, 1982.

Patents

2005	Patent Applied	Service Manager For Adaptive Load Shedding
1999	5856973	Data Multiplexing in MPEG Server to Decoder Systems
1999	5881245	Method and apparatus for transmitting MPEG data at an adaptive data rate
1999	5892535	Flexible, Configurable, Hierarchical System for Distributing Programming

Publications

1996	Chapter Author	**Special Edition Using CGI**, Que/MCP
1996	Chapter Author	**Special Edition Software Engineering with Turbo C++**, Que/MCP
1996	Chapter Author	**Special Edition Using the Internet, First Edition**, Que/MCP
1983	Co-Author	**Solar Assisted Poultry Growout House Design**, GT/EES

Employment Details

Software Engineer *EGT*

Brought a new product from concept to customer field trials and initial sales. This product, HEMi, integrates MPEG2 encoding, SPTS/MPTS stream multiplexing, QAM Modulation and RF upconversion and opened a new market area for the company. It involved coordination of multiple vendors, application integration and new development in C and C++ on a custom Linux platform.

Co-designed and developed a closed-loop multiplexing solution for EGT's MPEG encoders. This distributed implementation required the design an adaptive time synchronization mechanism and integration with the MPEG encoding algorithm software. Additional enhancements for Digital Program Insertion.

Filled the roll of Technical Manager of Platform Software providing technical direction for a diverse team responsible for platform architecture, Verilog/FPGA design and implementation, RTOS support, device drivers and development infrastructure.

Implemented collaboration development tools to facilitate communication and provide knowledge repository and lightweight mechanisms for project tracking. Provide internal support to manufacturing and quality assurance teams including delivery of production software, technical support for manual production and in-house web-based tools for production configuration and testing.

Computer Scientist *MileStone Solutions Inc.*

Complete development, deployment and online e-commerce setup and support for nowMessenger! This is a desktop client providing internet connectivity to a wide range of wireless devices using SNPP and SMTP protocols. This application is built as a Java Web Start application to support automatic upgrades and online product sales. The e-commerce system integrated the application registration with an online payment system built around PayPal.

Ongoing responsibility for installation, maintenance and upgrade of the MileStone Solutions network facility including web site maintenance, development infrastructure, and firewall administration and security. Network services include: email administration with virtual hosts and virus scanning; intranet web and email services; network FAX services with web interfaces and Windows clients; network alpha paging services with web interface; and network file hosting for Windows clients with centralized backup. MileStone maintains a heterogeneous network of Linux, Sparc Solaris (2.6), Windows systems.

Implementation, testing and support of mission-critical Billing System middleware for Cingular Wireless, providing a J2EE application that abstracts the access to and functionality of multiple billing systems and provides clients with an XML interface to legacy billing and provisioning systems. Designed and developed an adaptive load shedding mechanism to isolate frontend clients from partial backend failures. Installed and maintain source code management, production build infrastructure, client problem and service quality reporting systems and provide training for these systems.

Design, implementation and deployment of IVR middleware for Cingular Wireless. This multicomponent design includes a socket server front end and a J2EE middleware protocol converter. This system provides access to backend billing systems for Cingular's Periphonics based call centers. Design requirements include high availability and throughput as well as grace operation in conditions of backend failure. Project management required consideration of testability both inside and outside a container, and organization to facilitate team efforts to minimize time to market.

Design, implementation and deployment of a National SIM Manager for Cingular Wireless. Based on MileStone's TCP/IP server toolkit, this server provides system wide access to the SIM management and allocation system.

Design and implementation of a multi-threaded, multi-port TCP/IP server framework. This software is now in use in various projects in multiple application domains. The TCP/IP server framework handles all issues of multi-threading and provides a client services port and an administration port for controlling server operation.

Design and implementation of a Unified Communications system using Java, JDBC, servlets and JSP, Linux, postgreSQL, and hylaFAX. Features include web administration and communications services, FAX and voice mail forwarding and forwarding to email. This system integrates with a proprietary switch which provides an IVR front-end. This system provides store and forward FAX features with web and IVR access.

Design and development of a 100% Java SNPP paging client for *nowMessenger*. This is a full-featured SNPP client incorporating a PIM-like paging list and advanced features including splitting messages across multiple pages.

Design and implementation of a GUI layout and specification system that uses an enhanced HTML Table-like layout that is

interpreted by a custom layout manager. The architecture supports a factory model for construction of the GUI components and connecting these components to applications.

Design and development of a central subscriber information database using postgreSQL as the database engine and java/JDBC to provide network access. This project includes all aspects of system design and deployment, including platform and technology selection, software architecture, database design and development of all support tools and scripts for operation. This design resulted in a one hundred fold performance improvement over an Oracle system running on the same hardware.

Design and development of an outdial telephone conferencing system as a core component of a Unified Messaging system. This system uses Dialogic T1 and Conferencing components on an SCO UNIX platform.

Design and development of an email-alpha-paging gateway. This is a network daemon, written in java. Diverts email messages from a class of email addresses to the gateway server which constructs an appropriate alpha page for queueing with the paging service provider.

Design and development of an SNPP gateway as a java network daemon. Enhancements include splitting large messages into multiple pages and detailed logging of client access.

Design and development of Head End Controller software for an addressable TAP marketed by RF Communications Group. This software is written in Java and involves interface to various cable billing systems, design of a Graphical User Interface using JFC/Swing, and serial interface to a Maspro Data Transmitter.

Develop and maintain Web based applications for Satellink Communications, Inc. These applications automate pre-existing paper forms increasing the efficiencies of Satellink Customer Care and Billing Operations. Involved in the design and implementation of internet and Web based services (Unified Messaging) integrated with existing paging operations. Installation and maintenance of intranet web facilities including web servers, relational databases, network based fax and modem servers and web based alpha paging services. Provide UNIX system installation and administration for various operating systems, primarily Linux and SCO.

Develop and maintain Perl CGI scripts for Melia Design Group, Inc. Projects include development and debug of registration and trivia contest scripts for Turner Affiliate Resources and site access control.

Principal software developer of OnCart (previously Shoppers Express) Commercial Web Application for internet-based retail grocery delivery. Primary responsibility for the middle tier between the NetScape Commerce server and the Web Application running on HP-UX 10.x. The interface software relied on ONC/RPC with a trial port to DCE RPC. Implemented a software system in C++ that generated HTML pages incorporating data retrieved from a Sybase database. Maintenance and upgrade of HP-UX (OS upgrades, patches and Netscape upgrades). Coordinate with Netscape to resolve technical issues in using Netscape API. Installation and maintenance of g++ and other FSF tools. Modifications to g++ libraries and internal libraries to support shared library loading from the Netscape application. Reimplementation of the REGEX regular expression library using POSIX regex libraries to eliminate memory leaks. Design and implementation of JavaScript line item ordering and Credit Card validation for the shopping application.

Development and support of Digital Video's Video Server product including patent disclosures and associated technical documentation, system performance analysis and testing, and evaluation of system configurations, components and architectures.

System configuration and administration for Alumax's HP-UX system hosting data consolidation and reporting applications for regional and international operations. Tasks include: installation and software migration to new K-class 10.x system from C-class 9.x system; system configuration and upgrade, including logical volume configuration and management; installation of software and patches; and UNIX user support.

Initial setup and configuration of Sun Solaris systems for the Materials Research lab in the Mechanical Engineering department Georgia Tech.

Senior Software Engineer *ANTEC/Digital Video*

Performed technical evaluation of server architectures, platforms and vendors. Performed system analysis and documented requirements for MPEG Constant Bit Rate Server (Video Pump) components of the Digital Video Server Network. Coordinated the compilation of the Ad Insertion Product Specification as well as writing the Video Pump portions. Design and implementation (in C++) of the Video Pump, including UNIX real time support for Constant Bit Rate output and custom UNIX device drivers. U.S. and International Standards work including: Company Representative to ANSI X3L3.1 committee on Audio/Picture Coding; and National Delegate from the United States to the International Standards Organization (ISO) for MPEG (SC29/WG11). Authored "Distributed Video Server Architecture", a paper and presentation to the SCTE by the Digital Video VP

of Engineering. Provided technical support to Marketing on RFPs. Routine system administration including System Backups and NIS Installation. (1994-1996)

Senior Software Engineer *Melita International(eShare)*

Lead role in design, development and documentation of Melita's of next generation predictive dialing product. Authored system and subsystem Requirements and Design documents; implemented high reliability Client/Server architecture using ONC/RPC; designed an event and message logging subsystem; co-authored software style guide and development guidelines; established procedures for Requirements and Design documentation; developed and installed an embedded documentation system for source code; developed tools to convert cflow output to a graphical representation; ported FSF compilers, version control system and editor to multiple UNIX platforms including RS/6000 AIX and SCO 386; participated in technology strategy meetings with Marketing, Operations and executives; technical review of new and emerging technologies including ISDN, Central Office based services(AIN), and competitive and support products; perform routine system administration duties. (1991-1994)

Manager, Software Engineering *IVEX Corporation*

Established Software Engineering guidelines; installed source code control system; instituted Software Problem Resolution procedures; installed a workstation network hosting cross-development tools; consolidated software versions, reducing maintenance effort; provided national and international customer site support; supervised all software development efforts; authored technical specifications; designed control architecture for new product; developed IEEE 802.3 (ethernet) interface driver; hired and trained Software Engineers. Took lead role as system and software designer of second generation product; directly responsible for major feature enhancements; coordinated initial system delivery to pilot customer. (1989-1991)

Member of Scientific Staff *Bell Northern Research (Nortel)*

Coauthored a telecommunications site survey of a multi-tenant office complex as a basis for investigating new product opportunities. Performed architectural design of a T1 multiplexor product. Ported and enhanced an 8086 based real time operating system to improve performance, allow use of expanded memory, support additional PL/M memory models and support upgraded hardware. (1987-1989)

Senior Engineer *BBL Industries*

Successfully managed a crucial software development project involving 15 software engineers including project planning and tracking, resource allocation and system organization. Coordinated with Operations and Marketing for product release. Participated in real time operating system port including file system implementation, and design and implementation of a real time in-memory subscriber database. (1986-1987)

Software Engineer II *Intecolor Corporation*

Developed software for color VT-220 emulation in C and Z80 assembly specializing in the C to assembly interface and performance optimizations. Developed firmware for a hardware assisted screen fill for Intecolor's high performance process control graphics terminals. Performed an architectural analysis and requirements for evaluation of Real Time Operating Systems for the next generation process control terminals. (1984-1986)

Software Engineer *Chalk Board, Inc.*

Co-designed and developed two interactive graphics products on multiple platforms. These included a simple free-form paint program intended for young pre-schoolers and a more complex drawing program for older students. These were ported to the IBM PC and to Motorola 6502 based machines including the Apple][, Commodore 64 and Atari and required the development of low-level graphics libraries for each machine. Represented Chalk Board at trade shows. Acted as technical liaison to manufacturing subcontractors, establishing assembly procedures, monitoring quality, and providing testing assistance and software. (1983-1984)

Graduate Research Assistant *Georgia Tech Engineering Experiment Station*

Worked as an undergraduate, and later as a Graduate Research Assistant, for Engineering Experiment Station Lab chartered to employ appropriate technologies including co-generation, passive and active solar systems and technologies for agricultural applications and in support of developing countries. Published a design for a low-cost agricultural solar application prepared for Solar Applications Branch, Tennessee Valley Authority, January, 1983.

Instructor (part-time) *Southern Polytechnic State University (Southern Tech)*

Planned and taught Computer Organization, Computer Graphics, and Programming Languages in the School of Applied Computer Science. Developed Graphics and C Programming Courses; developed a microprogramming simulator for Computer Organization; co-developed a C Programming Seminar for the Continuing Education Department. (1984-1989)

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