Gary D. Duzan

3806 Jewell Ave.
Downingtown, PA 19335
610-343-1358
gary@duzan.org

Overview

- Experienced Software Developer

    - C, C++, Python, Java, shell scripting

    - Linux, AIX, Unix

    - Networking (Sockets, RPC, Pub/Sub)

    - Database/Language Internals, Digital Cable, Software Research, Telecom

    - Technical Leadership
- Master of Science, Computer Science

Employment History

IT Architect Senior / Systems Software Developer - FIS (June 2011 - present)

GT.M Core Team - Open Source Database/Language

- Developed enhancements to the GT.M product using C, shell scripting, MUMPS, assembly language, and Java on Linux, AIX, and other Unix systems.

- Led a small team focused on the needs of a particular customer. Worked with the customer to establish requirements and address support issues. Mentored junior team members.

- Traced the cause of system instability at load to contention for a shared spin/sleep lock. Replaced the lock with a process-shared pthread mutex, which allowed the system to remain highly stable with large numbers of processes at high load.

- Analyzed scalability issues related to a shared tree structure, and traced the problem to tree insertion time given high tree breadth. Reduced tree operation time significantly by adding a hash table layer in front of the tree, which reduced common operations from $O(n)$ time to $O(1)$ time, and in turn reduced contention for the tree and increased system throughput.

- Designed and implemented major portions of a feature to transform the single-host/shared memory database into a high performance multi-host database. Researched cluster communication libraries and facilities, and selected TIPC sockets as the best fit. Designed and incorporated a scheme to provide causal ordering across hosts while minimizing latency and communication overhead.

Principal Staff Software Engineer - Motorola Mobility (December 2005 - June 2011)

DAC Team - Digital Cable Access Control

- Developed enhancements to the DAC6000 digital cable access control system using C and Java on Linux and Solaris systems.

- Led a small team in the implementation of a prototype IP video system integrated with traditional Digital Cable access control (DAC). Designed the prototype architecture and implemented the adapter component between the prototype and the DAC6000. Integrated the

prototype software components with hardware and network components into a functional demo. The project was successful, and a followup project was begun to create a production version.

Software Developer - BBN Technologies (July 2001 - December 2005)

QuO Team - Adaptive Object Middleware Research

- Developed demonstrations of the open source QuO Toolkit and adaptive middleware technology using C++, Java, Python, and CORBA on Linux and Unix systems. Presented the resulting demonstrations at customer and trade show venues.

- Orchestrated the transition of a DARPA program from a set of standalone projects to an integrated technology demonstration with contributions from several different contractors. Designed the basic concept, implemented core software components to connect those contributed by the other contractors using C++ and CORBA, and led the integration effort. The demonstration was a success, and the program continued to the next phase.

- Authored a paper, "Building Adaptive Distributed Applications with Middleware and Aspects", documenting the aspect-oriented nature of the QuO toolkit. Presented the paper at AOSD '04.

Member of Technical Staff - GTE/Verizon Laboratories (June 1996 - July 2001)

Performance Management Team - Network Performance Monitoring and Reporting

- Designed and implemented a system to collect and correlate performance data from telecom switches, apply user configurable rules and thresholds, and present the results to the user as performance events, using C++ on Unix. The system allowed Network Operations to respond to emerging performance issues more quickly.

- Implemented data collection and processing portions of a network performance reporting system using Perl, awk, and SQL on Unix systems. The project earned a corporate award for enabling a new revenue stream via Service Level Agreements.

- Led a small team in the implementation of a generic real-time network performance monitoring system. Designed and implemented components for data collection, network object modeling, metric computation, and system management, using C++, Python, and CORBA. The system functionality was successfully demonstrated in telecom and data network domains.

Education

Master of Science, Computer Science - Northeastern University

- **Programming Languages and Compilers**
  Demeter/C++ Project, Compiler Optimization

- **Systems Software**
  Networking, Operating Systems, Database Systems

Bachelor of Science, Computer and Information Sciences - University of Delaware