

# Tommy M. McGuire

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## Education

- **The University of Texas at Austin**  
Ph.D. in Computer Sciences, May 2004  
*Correct Implementation of Network Protocols*
- M.A. in Computer Sciences, 1994
- B.A. in Computer Sciences, 1990

## Professional Experience

### **Cadence Design Systems**, June 2005–Present, Contractor

Development and maintenance of original multiserver gridMatrix grid computing platform using Perl and CORBA. Redesign of gridMatrix for C++ implementation. Performance measurement and enhancement of multiple communicating Perl demons resulted in a 60% reduction in time taken for software build and test process.

- EWS Recognition and Reward, Cadence Design Systems, July 2007.

### **IBM Austin**, June 2004–June 2005, Contract Software Development Engineer

Implementation of the peer-to-peer xCP Cluster Protocol for securely sharing digital media content on an embedded Linux platform. Implementation of the xCP broadcast encryption library in C, based on a Java prototype. Design and implementation of an embeddable, multi-protocol communications engine, supporting HTTP client, HTTP server, and multicast UDP operations.

- United States Patent Application 20060233372, “System and method for enforcing network cluster proximity requirements using a proxy.” With Amal Shaheen. Filed December 2004.

### **The University of Texas at Austin**, Sep. 1995–May 2003, Senior Operating System Spec.

Development and maintenance of open-source solutions for authenticated network access, large-scale machine installation, and request tracking for the Department of Computer Sciences. Development of two computational clusters based on dedicated machines and workstations running Linux, using the Condor workload management system Administration of Linux, Sun, IBM, and HP workstations. Software installation and maintenance. User support, including teaching introductory Unix classes.

### **IBM Austin**, 1994–1995, Contractor, Performance Measurement and Analysis

Creation of a file system performance suite for AIX, OS/2, and the Mach-based WorkPlace Operating System File Server. Performance measurement and evaluation of the WorkPlace Operating System.

### **IBM Austin**, 1992–1994, Co-op, Object Technology Products

Administration of AIX and OS/2 workstations. Creation of an encrypted electronic mail link between IBM Austin and Taligent, a database of Taligent Project Office clients, and secure methods of distributing documentation and source code.

**The University of Texas at Austin**, 1991–1992, Teaching Assistant, Software Engineering  
Advised 30 students on software engineering concepts. Examined and corrected test, papers, and documentation for undergraduate team programming projects.

**IBM Austin**, 1990–1991, Co-op, Distributed Systems Services:

Developed a prototype graphical user interface for the administration of the Distributed Computing Environment using SmallTalk and C under OS/2. Developed a graphical user interface compiler for system administration objects.

## Selected Publications

- *The Austin Protocol Compiler*. With M.G. Gouda. Kluwer Academic Publishers, 2005.
- “Correct Implementation of Network Protocols.” Ph.D. Dissertation. Department of Computer Sciences, The University of Texas at Austin, 2004.
- “Hop Integrity in Computer Networks.” With M.G. Gouda, M. El-Nozahy, and C.-T. Huang. *IEEE/ACM Transactions on Networking*, Volume 10, Number 3, June 2002.
- “Alert Communication Primitives in TCP.” With M.G. Gouda. *Journal of High Speed Networks*, Volume 9, Number 2/2000.
- “The Accelerated Heartbeat Protocols.” With M.G. Gouda. *The 18th International Conference on Distributed Computer Systems*, Amsterdam, The Netherlands, 1998.

## Selected Projects/Open Source

- **The Austin Protocol Compiler:** Translates a high-level network protocol definition language into executable C code. Written in C, Python and Bison/Flex.
- **CarbonCopy:** Net-install Linux on a large number of workstations based on a prototype machine. Written in TCL.
- **The Cascabel framework:** Foundation software for developing special-purpose issue tracking systems. Written in Python and PHP.
- **Horatio:** Allow authorized users dynamic access to a network, while preventing unauthorized users from doing so. Written in Perl, using a Linux firewall and OpenSSL.

## Technical Experience

**General** TCP/IP development and administration, encryption, client/server and peer-to-peer protocols, web applications, Condor and LSF, wired and wireless ethernet networks, embedded Linux, database management, compiler implementation, and performance analysis.

**Programming Languages** C/C++, Perl, Python, PHP, Java, TCL/Tk, Objective CAML, Haskell, shell scripting, FORTRAN, and XSLT.

**Operating Systems** Linux, Unix, AIX, Solaris, SunOS, HP-UX, Irix, and Windows XP.

**Tools** GCC toolchain, Emacs, Eclipse, T<sub>E</sub>X, CVS, ClearCase, and XML.