PUBLICATIONS:

- K. Mills, M. Vinson, and G. Cheng, "A Large Scale Comparison of Option Pricing Models with Historical Market Data," in *Proc. of the 4th Symposium on the Frontiers of Massively Parallel Computation*, 420-426, Oct., 1992, McLean, Virginia.

- G. Cheng, K. Mills, and G. Fox, "An Interactive Visualization Environment for Financial Modeling on Heterogeneous Computing Systems," to be published in *Proc. of the 6th SIAM Conference on Parallel Processing for Scientific Computing,* March 1993, Norfolk, Virginia.

- K. Mills, G. Cheng, M. Vinson, S. Ranka, and G. Fox, "Software Issues and Performance of a Stock Option Pricing Model on the Connection Machine-2 and DECmpp-12000," to appear in *the Fifth Australian Supercomputing Conference, and Syracuse Center for Computational Science-273*, 22 pps, March, 1992.

- K. Mills, G. Cheng, M. Vinson, and G. Fox, "Expressing Dynamic, Asymmetric, Two-Dimensional Arrays for Improved Performance on the DECmpp-12000," *Syracuse Center for Computational Science-261*, 10 pps, March, 1992.

- G. Cheng and Y. Zhang, "A Functional + Logic Programming Language in Interpretation-Compilation Implementation," *Lisp And Symbolic Computation: An International Journal*, Vol. 5, No. 3, 133 -156, 1992, Kluwer Academic Publishers.

- G. Cheng, "The Implementation of An AI Language Unifying Functional and Logic Paradigms," *M.S. Thesis*, Computer Science Dept., Huazhong Univ. of Sci. & Tech., China, 1988.

- G. Cheng, Z. Kang, "A Computer-Based Information System on Moving Elements of Debris Flow," in *Proc. of Japan-China Symp. on Landslides & Debris Flows*, 1989, Tokyo, Japan.

- X. Huang and G. Cheng, "A Province-Wide Natural Disaster Precaution System: An Application of Geographic Information System to Natural Disaster Reduction," in *Proc. of the 2nd International Workshop on GIS, Beijing '90*, 1990.

- G. Cheng, S. Huang, et al, "A Highway Toll-Collecting System with Mag-Card Reader," *Computer Application*, 1990.

- **"LISP+PROLOG" Interpreter-Compiler:** Written in C, the host of this system is a Lisp interpreter into which a Prolog compiler(as a knowledge base processor), an editor and a debugger are integrated. In this AI language, a user can program in either independent or mixed paradigms of Lisp and Prolog.

- **Vector-Based Spatial Database Management and Map Display System:** Written in Fortran77, Clipper and Halo(a GKS language) and used as a subsystem of the VirGIS (Virginia Geographic Information System) Project at Virginia Tech, this PC-based system allows the user to generate and display high quality graphics of DLG maps in various ways.

- **Debris Flow Database System:** This database was built for the dynamical research of debris flow disasters in Southwest China. System functions include database management, maintenance and applications.

- **Highway Toll-Collecting System:** Written in 8031/8051 assembly and as a firmware in MCS-51(a micro-chip processor), it handles real-time processing of input signals from magnetic card reader/encoder.

- **Employee Salary Processing System:** It is a system to process the pay-cash transaction of a particular institution for its own changing salary policy. The functions include edition, query, back-up, report etc..

ACADEMIC HONORS:

- Graduate Scholarship, Graduate School, Syracuse University.
- Junior Visiting Research Fellow, Chinese Academy of Sciences.
- Member of Chinese Computer Federation.

LANGUAGES:

- C, C++ - Fortran(Fortran77, Fortran90, CM-Fortran, MP-Fortran) - Lisp - MPL
- Prolog - Pascal - Cobol - Basic - Algol60 - 8086/8088, 8031/8051 Assembly - VHDL

MACHINES & TOOLS:

- SUNstation, DECstation, IBM RS6000(UNIX, AIX) - IBM 3090(VM, CMS) - VAX-11(VMS)
- IBM-PC(DOS, MS-WINDOWS) - dBASE-IV/Clipper - HALO
- TCP/IP - Express - PVM - AVS - Connect Machine 2/5 - DECmpp-12000
- X Window Programming (Xlib, X Toolkit, OSF/Motif Toolkit)
- Framemaker, Interleaf - many other software packages

REFERENCES:

(will be available upon request)

Major Courses Taken;

- Compiler Design - Object Oriented Design - Computer Language Design
- Operating Systems - Database Systems - Artificial Intelligence & Expert System
- Analysis of Algorithms - Semantics, Programming, and Verification
- Digital Machine Design - Computer Organizations & Architectures
- Concrete Math for Computer Science - Probability & Statistics
- Software Engineering - Programming Methodology - Formal Language & Automata
- Intro to Computer Graphics - Numerical Analysis - Microprocessors & Applications
- Data Parallel Computing - Intro to Computational Science

Gang Cheng

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EDUCATION:

- Master of Science (08/1991 - 01/1993)
School of Computer & Information Science, Syracuse University,
Syracuse, NY 13244-4100. G.P.A.: 3.9

- Graduate Study (03/1991 - 08/1991)
Dept. of Agri. Eng., Virginia Tech., Blacksburg, VA. G.P.A.: 4.0

- Master of Science (09/1985 - 07/1988)
Computer Science Dept., Huazhong Univ. of Sci. & Tech., China. G.P.A.: 3.8

- Bachelor of Science (09/1979 - 07/1983)
Computer Science Dept., Huazhong Univ. of Sci. & Tech., China. G.P.A.: 3.7

EMPLOYMENT:

- 01/1992 - now: A graduate research assistant in Northeast Parallel Architectures Center(NPAC) at Syracuse University. Supercomputer applications.

- 08/1991 - 12/1991: A teaching assistant in School of Computer & Information Science, Syracuse University. TA for an undergraduate course "Introduction to Automata Theory".

- 04/1991 - 08/1991: A programmer analyst in Information System Support Laboratory, Dept. of Agri. Eng., Virginia Tech. I developed a vector-based spatial database management and map display system.

- 08/1988 - 12/1990: A senior system analyst in Chengdu Institute of Computer Applications, Chinese Academy of Sciences. I was engaged in designing AI programming language and Geographic Information System(GIS). I also participated in development of the first commercial magnetic-card product in China.

- 1987 - 1988: A graduate research assistant in Computer Science Dept., Huazhong Univ. of Sci. & Tech., China. I developed a compiler and an interpreter for an AI language supporting both Lisp and Prolog programming paradigms.

- 1986 - 1987: A teaching assistant in Computer Science Dept., Huazhong Univ. of Sci. & Tech. TA for an undergraduate course "Principles of Database Systems".

- 1983 - 1985: An application programmer in Chengdu Institute of Geography, Chinese Academy of Sciences. I designed a database system for debris flow disasters in southwest China and developed an employee salary processing system.

PROJECTS:

- **Financial Modeling on Parallel Computers:** A set of stock option pricing models are implemented in Fortran90 and ported to Connection Machines(CM-2 & CM-5 in CMFortran), DECmpp-12000(in MPFortran and MPL), nCUBE2(in Fortran77+Express) and networked workstations(in Fortran77+Express). Through a large scale comparison of these models with historical stock market data, we demonstrate a potential application of parallel processing in financial industry.

- **An Interactive Visualization Environment for Financial Modeling on Heterogeneous Computing Systems:** A portable, workstation-based, interactive visualization environment is developed, using a commercial visualization system AVS, to visualize financial modeling on a heterogeneous system in which high performance computational modules running on massively parallel computers(CM2,CM5 and DECmpp-12000) are coupled, over a LAN(Ethernet), with graphical workstations(Sun,DECstation or IBM RS6000) running network-based visualization and interactive system control modules.