

Organizer, Internet Accessible Mathematical Computation (IAMC) Workshop, 1999, 2001, 2002, 2003, 2005.

Recipient, Graduates' Applause Certificate, University Teaching Council, Kent State University, Oct. 2002.

Finalist, Distinguished Scholar Award, Kent State U., 2002.

Ohio Governor's Award for U. Faculty Entrepreneurship, 2001.

"Internet Accessible Mathematical Computation: a progress report," *The Future of Mathematical Communication: 1999* (FMC99), MSRI, UC Berkeley, California, Dec. 1-5, 1999.

Plenary address, "Internet Accessible Mathematical Computation," 3rd Asian Symposium on Computer Mathematics, Lanzhou U., Lanzhou, P. R. China, August 6, 1998.

Main organizer 1999, 2001, and 2002 Workshops on *Internet Accessible Mathematical Computation*.

Four-week consulting assignment to Beijing, Lanzhou, and Xian the People's Republic of China, sponsored by the United Nations Development Program, Jul-Aug, 1998.

Grants ACTIVE GRANTS:

National Science Foundation (NSF) Supplement to grant CCR 021772, IAMC 2005 Conference, Beijing China. Amt: \$6,000, August 1, 2005.

NSF REU (jointly with Professor Weidong Liao, Shepherd University, West Virginia) *Web-based Mathematics Education*, Amt: \$6,000.00, 06/1/2005 to 05/30 2006.

OBR Research Challenge, (jointly with Prof. Mikusa of the School of Education), *Web-based Mathematics Education*, Amt: \$50,304, Jan. 2004 to Jan. 2005.

National Science Foundation (NSF) Supplement to grant CCR 021772 (Internet Accessible Mathematical Computation). Amt: \$4,800, August 1, 2003.

National Science Foundation (NSF), Grant No. CCR-0201772, Internet Accessible Mathematical Computation (IAMC) and Web-based Mathematics Education (WME), Amt: \$255,000, Date: August 1, 2002 through July 31, 2005

PAST GRANTS:

NSF Grant No. CCR-9721343, Amt: \$177,778, Title: Parallel/Distributed Symbolic Computation, Date: July 1998 to July 2003

NSF Grant No. CCR-9721343, supplement 001, Title: Mathematical Computation Protocols for Internet Accessible Mathematical Computation, Amt: \$11,279

NSF Grant No. CCR-9721343, software capitalization supplement 002, Title: OOP Design and Java Implementation of MP, Amt: \$26,660

NSF Grant CCR-0115611, Title: *Conference Support: Workshop on Internet Accessible Mathematical Computation, 7/22/2001*, Amt: \$4,200, Date: August 15, 2001 - July 31, 2002

Kent State U. Teaching Council, Summer Curriculum Development Grant, Title: *Interdisciplinary Curriculum Development in Web Design and Programming*, Amt: \$3,250, Date: Summer 2001

NSF Grant No. CCR-9721343, Title: 1999 Workshop on Internet Accessible Mathematical Computation, Amt: \$4,200, Date: June 1, 1999 to May 31, 2000

NSF Grant No. INT-9722919, Title: Symbolic Computation Algorithms and Systems for Polynomial Computations, Amt: \$27,450, Date: Jan. 1998 to January 31, 2003.

NSF Grant No. CCR-9503650, Title: Efficient Algorithms and System Interface for Scientific Computation, Amt: \$105,000, Date: Sept. 1995 to Aug. 1997.

NSF Supplement to Grant No. CCR-9423696, Title: Common Lisp Interface to PVM, Amt: \$12,040, Date: May 1, 1995.

NSF Grant No. CCR-9423696, Title: SymbolicNet - An Internet Information Service for the Symbolic Computation Research Community, Amt: \$23,354 Date: May 1, 1995 - April 30, 1996.

NSF Grant No. CCR-9201800, Title: High-Performance and System Integration for Symbolic and Numeric Computation, Amt: \$42,000/per year, Date: January 1, 1993 - Dec. 31, 1995.

Publications BOOKS:

1. *Web Design and Programming*, (with Sanda Katila) Brooks/Cole, 10-2003
2. *Java with Object-Oriented Programming*, Brooks/Cole, 7-2002
3. *Standard C++ with Object-Oriented Programming*, Brooks/Cole, 7-2000
4. *Java with OOP and Web Applications*, Brooks/Cole, 9-1998
5. *An Introduction to UNIX with X and the Internet*, PWS, 7-1996
6. *C++ with Object-oriented Programming*, PWS, 1-1994
7. *An Introduction to ANSI C on UNIX*, Wadsworth, 9-1991
8. *An Introduction to Berkeley UNIX*, Wadsworth, 2-1988

ARTICLES:

“GeoSVG: A Web-based Interactive Plane Geometry System for Mathematics Education.” (with Xun Lai) Proceedings, the 2nd IASTED International Conference on EDUCATION AND TECHNOLOGY (ICET), July 17-19, 2006, pp. 5-10.

“Design and Implementation of an Assessment Database for Mathematics Education.” (with Saleh Alshomrani) Proceedings, the 2nd IASTED International Conference on EDUCATION AND TECHNOLOGY (ICET), July 17-19, 2006, pp. 173-179.

“MEML: Supporting Structured, Interoperable and Dynamic Web-based Mathematics Education.” (with Xiao Zou) Proceedings, the 2nd IASTED International Conference on EDUCATION AND TECHNOLOGY (ICET), July 17-19, 2006, pp. 113-120.

- “An Approach for Interoperable and Customizable Web-based Mathematics Education.” (with David Chiu) Proceedings, The Fifth IASTED International Conference on Web-based Education, January 23-25, 2006 Puerto Vallarta, Mexico, pp. 80-87.
- “Lesson Page Structure and Customization in WME.” (with Wei Su and Lian Li) IAMC 2005 Workshop, Chinese Academy of Sciences, July 24 2005, Beijing, China.
- “An SVG Based Tool for Plane Geometry and Mathematics Education,” (with Xun Lai) IAMC 2005 Workshop, Chinese Academy of Sciences, July 24 2005, Beijing, China.
- “Building DMAD: A Distributed Mathematics Assessment Database for WME,” (with Saleh Al-shomrani) Proceedings, IEEE SoutheastCon, Fort Lauderdale, Florida, April 2005, pp. 630-635.
- “Features and Advantages of WME: A Web-based Mathematics Education System,” (with M. Mikusa, S. Al-shomrani, D. Chiu, X. Lai, and X. Zou) Proceedings, IEEE SoutheastCon, Fort Lauderdale, Florida, April 2005, pp. 621-629.
- “Web-based Mathematics Education Pilot Project,” (with Michael Mikusa, David Chiu, Xun Lai, and Xiao Zou) Proc., Conference on Information Technology in Education, Elizabethtown College Elizabethtown, PA, Sept. 18, 2004, pp. 132-138.
- “Web-based Mathematics Education: MeML Design and Implementation,” (with Yi Zhou and Xiao Zou) Proc., IEEE/ITCC’2004, Las Vegas, Nevada, April 5-7 2004, pp. 169-175.
- “The Internet Accessible Mathematical Computation Framework,” (with S. Gray, N. Kajler, D. Lin, W. Liao, X. Zou) Science in China Ser. F Information Sciences 2004 Vol. 47 No.1 75-88.
- “WME: Towards a Web for Mathematics Education,” (with N. Kajler, Y. Zhou, and X. Zou) Proc., ISSAC’2003, ACM Press, August 2003, pp. 258-265.
- “Secure Internet Accessible Mathematical Computation Framework,” (with D. Lin and Z. Song) Proc., International Congress of Math. Software, World Scientific, August 2002, Beijing, China, pp. 501-502.
- “Local and Remote User Interface for ELIMINO through OMEI,” (with Y. Wu, W. Liao, and D. Lin) Proc., Int. Congress of Math. Software, World Scientific, Aug. 2002, Beijing, China, pp. 411-420.
- “Initial Design of A Web-Based Mathematics Education Framework,” (with N. Kajler, Y. Zhou, and X. Zou) IAMC 2002 Workshop, July 7, 2002 Lille, France.
- “Mathematics over the Internet/Web: A Protocol-based Approach,” (with Q. Guo and W. Liao) Proc., International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA’02), June 2002, pp. 2190-2196.
- “OMEI: An Open Mathematical Engine Interface,” (with W. Liao and D. Lin) In *Computer Mathematics*, Proc. of ASCM’2001, the 5th Asian Symposium on Computer Math., Sept 26-28, 2001, Matsuyama, Japan, World Scientific Press, (Lecture Notes Series on Computing, Vol. 9), pp. 82-91.
- “IAMC Architecture and Prototyping: A Progress Report,” (with S. Gray, N. Kajler, D. Lin, W. Liao, and X. Zou) Proc., ISSAC’2001, U. of Western Ontario, London, Ontario, Canada, July 22-25, 2001, pp. 337-344.

- “Another Attempt for Parallel Computation of Characteristic Sets,” (with I. Ajwa and D. Lin) Proc., the 4th Asian Symposium on Computer Math. (ASCM’2000), Chiang Mai, Thailand, Dec. 17-21, 2000, pp. 63-70.
- “Dragonfly: A Java-based IAMC Client Prototype,” (with Weidong Liao) Proc. the 4th Asian Symposium on Computer Math. (ASCM’2000), Chiang Mai, Thailand, Dec. 17-21, 2000, pp. 281-290.
- “Building IAMC: A Layered Approach,” (with Weidong Liao) Proc., International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA’00), June 26-29, 2000, Csrea Press, pp. 1509-1516.
- “Design and Protocol for Internet Accessible Mathematical Computation,” Proc., ISSAC’99, Simon Fraser U., Vancouver, BC, Canada, July 28-31, 1999, ACM Press, pp. 291-298.
- “Parallel Implementations of the Characteristic Sets Method,” (with Iyad A. Ajwa) Proc., 1999 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA’99) June 28 - July 1, 1999, Monte Carlo Resort, Las Vegas, Nevada.
- “The MP Encoding for Distributed Mathematical Computations: An Object-oriented Design and Implementation,” (with Simon Gray and Linlin Tong), Proc., 1999 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA’99) June 28 - July 1, 1999, Monte Carlo Resort, Las Vegas, Nevada, pp. 2084-2090.
- “IAMC: Internet Accessible Mathematical Computation,” Proc., 3rd Asian Symposium on Computer Math. (ASCM’98), Lanzhou U., Lanzhou, P. R. China, August 6, 1998, pp. 1-13.
- “Design and Implementation of MP, a Protocol for Efficient Exchange of Mathematical Expressions” (with S. Gray and N. Kajler) *Journal of Symbolic Computation*, Vol. 25, No. 2, Academic Press, Feb. 1998, pp. 213-238
- “PvmJobs: A Generic Parallel Jobs Library for PVM” (with Hong H. Ong and Iyad A. Ajwa), Proc. of IEEE National Aerospace and Electronics Conference (NAECON ’97), pp. 165-172, Dayton, OH, July 14-18, 1997.
- “Applying Parallel/Distributed Computing to Advanced Algebraic Computations” (with Iyad A. Ajwa), Proc. of IEEE National Aerospace and Electronics Conference (NAECON ’97), pp. 156-164, Dayton, OH, July 14-18, 1997.
- “Tools for Parallel/Distributed Mathematical Computation,” Proc., PASCO ’97 (July 20-22) Maui, HI, pp. 188-195.
- “Parallel Characteristic Sets Methods Using PVM” (with Iyad A. Ajwa), Cluster Computing Conference (CCC’97), March 9-11, 1997, Emory University, Atlanta, GA, USA
<http://www.mathcs.emory.edu/ccc97/1997>.
- “A Generic Parallel Jobs library for PVM” (with Hong Ong and Iyad Ajwa), Cluster Computing Conference (CCC’97) March 9-11, 1997 Emory University, Atlanta, GA, USA
<http://www.mathcs.emory.edu/ccc97/1997>.

“Using PVM to Speedup Groebner Bases Computation” (with Iyad A. Ajwa), Proc., Eighth IASTED International Conference on Parallel and Distributed Computing and Systems, Oct. 16-19, 1996, Chicago, IL, USA, pp. 457-461.

“Pluggability Issues in the Multi Protocol” (with Simon Gray and Norbert Kajler), Proc., DISCO’96, Karlsruhe, Germany, Sept. 18-20, 1996.

“Tools to Aid PVM Users,” the Fourth U.S. PVM Users’ Group Meeting, <http://www.cic-8.lanl.gov/pvmug96>, Santa Fe, NM, Feb. 25–27, 1996.

“Parallel Polynomial Operations on SMPs: An Overview,” *Journal of Symbolic Computation*, Vol. 22, pp. 1-14 (1996).

Patents, Copyrights, and Software Systems Developed

Website: *Interactive Demos of Mathematical Computations*, selected by *Internet Scout* in *National Science Digital Library Report for Math, Engineering, and Technology* 10-2002

Create and maintain the NSF sponsored `SymbolicNet.org` 1994–.

MP, a Mathematical data encoding and transmission protocol.

PVM-ET, a set of PVM (Parallel Virtual Machine) enhancement tools including compilation, task distribution, management, and interfaces to Common Lisp, MAXIMA, and SACLIB.

MathML Presentation and Content Code Generation Demo package, Mar. 1999.

Students

Ph.D. SUPERVISED:

Weidong Liao (2003), *IAMC Framework: Design and Prototyping*

Simon Gray (1998), *MP: A Protocol for the Efficient Exchange of Mathematical Data*

Iyad A. Ajwa (1998), *Parallel Algorithms and Implementations for the Grobner Bases Algorithm and the Characteristic Sets Method*

Olaf Bachmann (1996), *Chains of Recurrences*

Yaser Doleh (1995), *The Design and Implementation of a System Independent User Interface for an Integrated Scientific Computing Environment*

Mohamed Rayes (1995), *Parallel Algorithms and Implementations for Sparse Multivariate GCD*

Ken Weber (1994), *Parallel Integer GCD Algorithms and Their Application to Polynomial GCD*

Naveen Sharma (1992), *User-directed Generation of Sequential and Parallel Codes for Finite Element Analysis*

Vilmar Trivisan (1991), *Univariate Polynomial Factorization*

Hui Tan (1986), *FINGER: A Finite Element Code Generator*

Ph.D. ON GOING:

Saleh Alshomrani, Xun Lai, Dr. Xiao Zou

M.S. STUDENTS SUPERVISED:

Maja Anderson, Ashish Bhargava, Dan Bennett, David Chrin, David Chiu, Yaser Doleh, Barbara Gates,

Robert Hall, Chia-Kai Hsu, Chao-Jen Hsu, Chokchai Leangsuksun, Sam Lin, Carl Powell, Mohamed Rayes, Naveen Sharma, Cora Stackelberg, Trevor Tan, Linlin Tong, Vilmar Trevisan, Sanjiva Weerawarana, Carl Williams, David Wu, Douglas Young, Pei Young, Rick Zhang.

Synergistic Activities

Web Design and Programming ugrad minor development, together with Austin Melton (CS), Sanda Katila and Charles Walker (VCD/Art) 1997–.

NSF funded Research Opportunity Award (ROA) to support Prof. S. Gray of Ashland U. 1998-99