William D. Young, Ph.D.

Office Address

University of Texas at Austin
Department of Computer Science
Austin, Texas 78712
(512) 471-9782
byoung@cs.utexas.edu

Home Address

7617 Nez Perce Trace
Manor, TX 78653
(512) 276-1309

bill@blakesworld.org

Research Interests

Digital systems modeling and verification, automated theorem proving, computer security.

Education

Ph.D. in Computer Science, The University of Texas at Austin, 1988.

Master of Arts, Computer Science, The University of Texas at Austin, 1980.

Master of Arts, Philosophy, The University of Texas at Austin, 1976.

Bachelor of Arts with high honors, Philosophy, The University of Texas at Austin, 1976.

Bachelor of Science in Mathematics with honors, The University of Texas at Austin, 1975.

Professional Experience

September, 2013–present: ***The University of Texas at Austin***, Research Scientist and Senior Lecturer

September, 2004–September, 2013: ***The University of Texas at Austin***, Research Scientist and Lecturer

September, 2001–September, 2004: ***The University of Texas at Austin***, Adjunct Associate Professor of Computer Science

July, 1997–August, 1999: ***EDS CIO Services, Austin, Texas***, Research Scientist.

1987–1997: ***Computational Logic, Inc., Austin, Texas***, Senior Computing Research Scientist; Member, Board of Directors (1994–1997).

June, 1984–September, 1987: ***Honeywell Secure Computing Technology Center, St. Anthony, Minn.***, Research Scientist and Consultant.

1978–1987: ***The University of Texas at Austin, Institute for Computing Science and Computer Applications***, Research Engineering/Scientist Assistant, Systems Analyst.

1980–1981, 1983–1986: ***Southwest Texas State University, Department of Mathematics and Computer Science***, Part-Time Instructor.

1978–1980: ***Austin Community College, Department of Mathematics***, Part-Time Instructor.

Memberships   Phi Beta Kappa; Phi Kappa Phi; Phi Eta Sigma; Pi Mu Epsilon; National Association For Computing Machinery (ACM); Institute for Electrical and Electronics Engineers (IEEE).

Professional Activities

Member editorial board (1995–2001), *Journal of Computer Security.*

Member program committee for the Colloquium for Information Systems Security Education (2011 and 2012).

Invited talk: "It's a Dangerous (Cyber) World," Military Officers Association of America, Austin Chapter, February, 2014.

Invited panelist: "Cybersecurity and International Affairs," UT International Society, November, 2014.

Invited talk: "Cyberwar: How Worried Should We Be?", Information Systems Security Association, Capitol of Texas Chapter, May, 2013.

Invited talk: "Cyber Defense and Offense," US Army War College Fellowship, February, 2013.

Invited tutorial presenter: "Cyber Security," Texas Symposium on Software Engineering, Austin, Texas, July, 2011.

Invited speaker: "Cyber Security for Utilities," Cyber Security for Utilities Symposium (March 29, 2011) Austin, Texas.

Reviewer for numerous technical publications including *Formal Aspects of Computing*, *IEEE Transactions on Software Engineering*, *Lisp and Symbolic Computation*, and *Distributed Computing*, for numerous conferences, and for various organizations such as the National Science Foundation.
Local arrangements chair: 2005 South Central Information Security Symposium to be held in Austin, Texas, April, 2005.

Tutorial presenter: "Introduction to Computer Security," Texas Symposium on Software Engineering, August 27–28, 2004.

Tutorial co-presenter (with J Moore): "ACL2: A Computational Logic for Applicative Common Lisp," Eleventh Annual Conference on Computer Assurance, Gaithersburg, Maryland, June, 1996.

Tutorial presenter: "ACL2: An Industrial Strength Version of Nqthm," Third International Symposium of Formal Methods Europe, Oxford, March, 1996.

Member program committee, 1996 and 1997 IEEE Computer Security Foundations Workshops.

Tutorial presenter: "The Boyer-Moore Theorem Prover," First International Symposium of Formal Methods Europe, Odense, Denmark, April, 1993.

Invited speaker: "Introduction to a Formally Defined Hardware Description Language," Motorola Workshop on Computer-Aided Verification of Digital Circuits, Austin, Texas, October 30, 1992.

Invited lecture: "Hardware Verification using the Boyer-Moore Theorem Prover," Advanced Course on Formal Techniques in VLSI Design, L'Aquila, Italy, July 6-10, 1992.

Invited lecture: "The CLI Stack," Mount Allison University, Moncton, New Brunswick, Canada, November 8, 1991.

Co-presenter (with Don Good) of tutorial on the CLI Stack, VDM'91, Noordvijkerhout, The Netherlands, October, 1991.

Chair of panel on formal methods, Symposium on Software Analysis, Testing, and Verification, 1991.

Papers

William Young. "Using Faculty Security Research in Undergraduate Teaching: A Case Study," 2014 Colloquium on Information Systems Security Education (CISSE), June 2014.

William Young. "Developing a Blended Computer Security Course," 2012 Colloquium on Information Systems Security Education (CISSE), June 2012.

B.C. Baldwin, W.D. Young, S.M.B. O'Hare, R.C. Johnson, A.M. Lawyer, J.N. Gentle, A. White, J.A. Duncanson, "Using Simulation in Medical Communications Training," 2011 International Conference on Modelling, Simulation, and Identification (MSI 2011), 2011.

Mike Dahlin, Ryan Johnson, Robert B. Krug, Michael McCoyd, William Young, "Toward the Verification of a Simple Hypervisor," Tenth International Workshop on the ACL2 Theorem Prover and its Applications, November, 2011.

Ryan Johnson, William Young, Brian Baldwin, Sheilagh OHare, Aubrey White, Aaron Lawyer, John Gentle and John Duncanson. "SMDS: Simulation and Stimulation of Army Medical Business Systems," SpringSim'11 conference of the Society for Modeling and Simulation International, April, 2011.

Warren A. Hunt, Jr., Robert B. Krug, Sandip Ray, and William D. Young. "Mechanized Information Flow Analysis through Inductive Assertions," Proceedings of Formal Methods in Computer Aided Design (FMCAD 2008), Portland, OR, November, 2008.

John Cowles, David Greve, and William D. Young. "The While Language Challenge: First Progress," Proceedings of the Seventh International Workshop on the ACL2 Theorem Prover and its Applications, November, 2007.

David S. Hardin, Eric W. Smith, and William D. Young. "A Robust Machine Code Proof Framework for Highly Secure Applications," Proceedings of the Sixth International Workshop on the ACL2 Theorem Prover and its Applications, August, 2006.

William D. Young. "Introducing Abstractions Via Rewriting," in D. Borrione and W. Paul, editors, *Proceedings of the 13th Advanced Research Working Conference on Correct Hardware Design and Verification Methods* (CHARME '05), Lecture Notes in Computer Science, Volume 3725, Springer Verlag, 2005, pp.402–405.

William D. Young. "Introducing Abstractions via Rewriting," presented at 2005 South Central Information Security Symposium, University of Texas at Austin, April, 2005.

William D. Young. "Reverse Abstraction in ACL2," Proceedings of the Fifth International Workshop on the ACL2 Theorem Prover and its Applications, November, 2004.

William D. Young. "Using ACL2 to Model Noninterference Security Policies," presented at 2004 South Central Information Security Symposium, Rice University, April, 2004.

William D. Young and William R. Bevier. "Mathematical Modeling and Analysis of an External Memory Manager," in *FME'97: Industrial Applications and Strengthened Foundations of Formal Methods*, Springer-Verlag Lecture Notes in Computer Science 1313, 1997, pp. 237–257.

William D. Young. "Comparing Verification Systems: Interactive Consistency in ACL2," *Proceedings of the Eleventh Annual Conference on Computer Assurance*, 1996, pp. 35–45. An expanded version appears in *IEEE Transactions on Software Engineering*, Vol. 23, no. 4, (April, 1997) pp. 214–223.

William R. Bevier, Richard M. Cohen, and William D. Young. "Connection Policies and Controlled Interference," *Proceedings of the Eighth IEEE Computer Security Foundations Workshop*, pp. 167-76, June, 1995.

William D. Young. "Computational Logic 1994 Research Review," *Association for Automated Reasoning Newsletter*, No. 26, June 1994.

William R. Bevier and William D. Young. " A State-Based Approach to Noninterference," *Proceedings of the Computer Security Foundations Workshop VII*, IEEE Computer Society Press, pp. 11–21, June, 1994. Also appears in *Journal of Computer Security*, Vol. 3, No. 1, 1994/95, pp. 55–70.

William D. Young. "Modeling and Verification of a Simple Real-Time Gate Controller," in Michael Hinchey and Jonathan Bowen, editors, *Applications of Formal Methods*, Prentice-Hall Series in Computer Science, 1995, pp. 181–202.

William D. Young. "System Verification and the CLI Stack," Jonathan Peter Bowen, editor, *Towards Verified Systems*, Elsevier Science Publishers Series on Real-Time Safety Critical Systems: Amsterdam, 1993, pp. 225–248.

Miren Carranza and William D. Young. "Verifying a Fuzzy Controller," *Proceedings of the Second International Workshop on Industrial Fuzzy Control and Intelligent Systems*, Texas A&M University, December, 1992, pp. 194–203.

William D. Young. "Verifying the Interactive Convergence Clock Synchronization Algorithm Using the Boyer-Moore Theorem Prover," NASA Contractor Report 189649, April 1992.

Bishop C. Brock, Warren A. Hunt, Jr., and William D. Young. "Introduction to a Formally Defined Hardware Description Language," in *Proceedings of the International Conference on Theorem Provers in Circuit Design: Theory, Practice and Experience*, North-Holland: Amsterdam, 1992, pp. 3–36.

Donald I. Good and William D. Young. "Mathematical Methods for Digital Systems Development," in *VDM'91 Formal Software Development Methods*, S. Prehn, W.J. Toetenel, editors, Springer-Verlag Lecture Notes in Computer Science 552, pp. 406–430, 1991.

William D. Young. "Formal Methods versus Software Engineering: Is There a Conflict?" *Proceedings of the Fourth Testing, Analysis, and Verification Symposium*, Victoria, British Columbia, October, 1991, pp. 188–189.

William R. Bevier and William D. Young. "Machine Checked Proofs of the Design of a Fault-Tolerant Circuit," *Formal Aspects of Computing* 4, pp. 755-775, 1992. Also appears as NASA CR-182099, November, 1990.

Robert L. Akers, Bret Hartman, Lawrence Smith, Millard Taylor, and William D. Young. "Gypsy Verification Environment User's Manual," CLI technical report 61, Computational Logic, Inc., August, 1990.

William R. Bevier and William D. Young. "The Design and Proof of Correctness of a Fault-Tolerant Circuit," in *Dependable Computing for Critical Applications*, J.F. Meyer and R.D. Schlichting, editors, Springer-Verlag, Vienna, 1991, pp. 243-260.

Warren A. Hunt, Jr. and William D. Young. "Maintaining Abstractions with Verification," *Proceedings of the Fifth Annual Conference on Computer Assurance*, June 1990, pp. 117–125.

William D. Young. "Gypsy and the GVE," invited presentation at the International Workshop on Formal Methods in Software Development, Napa, California, May, 1990.

William D. Young. "Verified Program Support Environments," *Proceedings of the International Workshop on Formal Methods in Software Development*, Napa, California, May, 1990.

William D. Young. "Verified Compilation in Micro-Gypsy," *Proceedings of the Software Testing, Analysis and Verification Symposium*, Key West Florida, December, 1989, pp. 20–26.

William D. Young. "Comparing Specification Paradigms: Gypsy and Z," *Proceedings of the 12th National Computer Security Conference*, Baltimore, MA, 1989, pp. 83–97.

William R. Bevier, Warren A. Hunt, Jr., J S. Moore, and William D. Young. "An Approach to Systems Verification," *Journal of Automated Reasoning* , Vol. 5, Number 4, (December, 1989), pp. 411–428.

William D. Young. "A Mechanically Verified Code Generator," *Journal of Automated Reasoning*, Vol. 5, Number 4, (December, 1989), pp. 493–518.

William D. Young. "Toward Foundations of Security," presented at the Computer Security Foundations Workshop II, Franconia, N.H., June, 1989. I chaired a panel on this subject at the workshop.

William D. Young. *A Verified Code Generator for a Subset of Gypsy*, Ph.D. dissertation, The University of Texas at Austin, August, 1988. Available (minus certain appendices) from Computational Logic as CLI technical report 33.

Matthew J. Kaufmann and William D. Young. "Comparing Specification Paradigms for Secure Systems: Gypsy and the Boyer-Moore Logic," *Proceedings of the 10th National Computer Security Conference*, 1987.

William D. Young and John McHugh. "Coding for a Believable Specification to Implementation Mapping," *Proc. IEEE Symposium on Security and Privacy,* April, 1987.

William R. Bevier, Warren A. Hunt, Jr., and William D. Young. "Toward Verified Execution Environments," *Proc. IEEE Symposium on Security and Privacy*, April, 1987. Reprinted in Rein Turn (editor), *Advances in Computer System Security, Volume III*, Artech House, Inc., 1988.

J. Thomas Haigh, John McHugh, Richard A. Kemmerer, and William D. Young. "Experience using Two Covert Channel Analysis Techniques on a Real System Design," *Proc. IEEE Symposium on Security and Privacy*, April, 1986, pp. 14–24. Reprinted in *IEEE Transactions on Software Engineering*, January, 1987.

J. Thomas Haigh and William D. Young. "Extending the Non-Interference Version of MLS for SAT," *Proc. IEEE Symposium on Security and Privacy*, April, 1986, pp. 232–239. Received best paper award at the Symposium. Reprinted in *IEEE Transactions on Software Engineering*, January, 1987. Reprinted in Rein Turn (editor), *Advances in Computer System Security, Volume III*, Artech House, Inc., 1988.

William R. Bevier, Warren A. Hunt, Jr., and William D. Young. "Toward Verified Execution Environments," *Proc. IEEE Symposium on Security and Privacy*, April, 1987. Reprinted in Rein Turn (editor), *Advances in Computer System Security, Volume III*, Artech House, Inc., 1988.

William D. Young, Paul A. Telega, W. Earl Boebert, and Richard Y. Kain. "A Verified Labeler for the Secure Ada Target," , *Proceedings of the 9th National Computer Security Conference*, September, 1986.

William D. Young, W. Earl Boebert, and Richard Y. Kain. "The Extended Access Matrix Model of Computer Security," *Software Engineering Notes*, (August, 1985), vol. 10, no. 4, pp. 119–125.

William D. Young, W. Earl Boebert, and Richard Y. Kain. "Proving a Computer System Secure," *The Scientific Honeyweller* (July, 1985), vol. 6, no. 2, pp. 18–27. Reprinted in *Tutorial: Computer and Network Security*, eds. Marshall D. Abrams and Harold J. Podell, IEEE Computer Society Press, Washington, D.C., October, 1986. Reprinted in Rein Turn (editor), *Advances in Computer System Security, Volume III*, Artech House, Inc., 1988.

W. Earl Boebert, Richard Y. Kain, and William D. Young. "Secure Computing: The Secure Ada Target Approach," *The Scientific Honeyweller* (July, 1985), vol. 6, no. 2, pp. 1017. Reprinted in *Tutorial: Computer and Network Security*, eds. Marshall D. Abrams and Harold J. Podell, IEEE Computer Society Press, Washington, D.C., October, 1986. Reprinted in Rein Turn (editor), *Advances in Computer System Security, Volume III*, Artech House, Inc., 1988.

W. Earl Boebert, William D. Young, Richard Y. Kain, and Scott A. Hansohn. "Secure Ada Target: Issues, System Design, and Verification," *Proc. IEEE Symposium on Security and Privacy*, March, 1985.

Dolly J. Young and William D. Young. "The Role of the Family in 'There Are No Madmen Here' by Gina Valdes," presented at Third Student Conference on Latin America, The University of Texas at Austin, April, 1983. Also appeared as a review in *Revista Chicano-Riquena*, vol. XIII, no. 1 (Spring, 1985), pp. 97–99.

Dolly J. Young and William D. Young. "The New Journalism in Mexico: Two Women Writers," *Chasqui Revista de Literatura Latinoamericana* 12:2, Febrero/Mayo, 1983, pp. 72–80. Also presented at the Southwest Conference on Latin American Studies, Abilene, Texas, March, 1982.

William D. Young and Donald I. Good. "Program Verification and Embedded Aerospace Software," *Proceedings of the AIAA Computers in Aerospace Conference III*, October, 1981, pp. 246–250.

Anand R. Tripathi, William D. Young, Donald I. Good, James C. Browne. "HAL/S/V: A Verifiable Subset of HAL/S," *Sigplan Notices* (March, 1981), pp. 102–113.

William D. Young and Donald I. Good. "Steelman and the Verifiability of (Preliminary) Ada," *Sigplan Notices* (February, 1981), pp. 113–119.

Anand R. Tripathi, William D. Young, Donald I. Good, James C. Browne. "Design of a Verifiable Subset for HAL/S," *Journal of Guidance and Control* (January, 1981), pp. 86–87.

William D. Young and Donald I. Good. "Generics and Verification in ADA," *Proceedings of the ACM Symposium on the ADA Programming Language*, November, 1980, pp. 123–127.

Anand R. Tripathi, William D. Young, Donald I. Good. "A Preliminary Evaluation of Verifiability in ADA," *Proceedings of the ACM National Conference*, October, 1980, pp. 218–224.

William D. Young, Anand R. Tripathi, Donald I. Good, and James C. Browne. "Evaluation of Verifiability in HAL/S," *Proceedings of the AIAA Computers in Aerospace Conference II*, October, 1979, pp. 359–366.